



Louisiana **CONSERVATION** **REVIEW**

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The Magic of Black Gold

The galleons of old Spain were laden with gold bars from the mines of New Spain . . . gold that was the symbol of wealth and power in the Sixteenth Century of Ferdinand and Isabella.

Now we have a new symbol of wealth . . . the "black gold" that gushes from the bowels of the earth, the crude oil that is stored in great reservoirs, the refined gasoline that powers a swifter and swifter civilization.

Louisiana stands on the threshold of this new era of "black gold"—a new wealth that is created by the conjunctivity of scientific exploration, engineering skill and the market demand of a vast consuming public.

Louisiana holds in trust one of the world's greatest petroleum reserves. This trust may be wisely administered, so that its benefits are spread over a long period, or it may be unwisely administered, so that there is a waste and dissipation of this great natural resource, a production beyond the capacity of the market to absorb it.

This Department has had the full co-operation of the producing companies, both major and independent operators, in its efforts to follow a sane middle course that will neither discourage the investment of private capital and enterprise nor exhaust its great petroleum reserve.

Here is the magic "black gold" that will generate the power of our new industrial empire—fatten our factory payrolls, pave our highways, extend our educational facilities, add to the buying power and prosperity of our people.

DEPARTMENT OF CONSERVATION

126 Civil Courts Bldg.

New Orleans, - - Louisiana

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The cover design of this issue shows in the upper left-hand panel the Louisiana state emblem, in the upper right-hand panel a Louisiana buck, started by the flash-light, and in the lower panel the results of reforestation at the end of eleven years. (See reforestation progress pictures on Page 25).

Copyrighted Davis Aerial Photographic Service



The Ideal State Of Tomorrow

By

WILLIAM G. RANKIN, Commissioner
Department of Conservation

I think we all subscribe to the American principle of democracy that the state shall interfere as little as possible with the rights of the individual, and while in times of emergency and stress we may tolerate governmental interference with these rights and a more stringent regulation of our affairs we always welcome the return of our individualistic forms of self-expression and development.

But surely this does not mean that the state should neglect the obligation and the opportunity to promote the general welfare, to employ its resources to the end that its citizens may enjoy a full well-rounded life of work and play in those proportions

that will contribute most to their material and aesthetic advancement.

I am thinking particularly in terms of conservation, of course; not only the conservation of our natural resources, in which I am directly interested, but the conservation of those staunch virtues which characterized our American forebears, the early pioneers who fought and died to free their land of the tyrant's yoke. With ax and musket they blazed the trail of a new civilization on this continent; they followed an active outdoors life in contrast with the sedentary occupations of many of their latter-day descendants in the urban centers.

It is quite true that we are living in a faster age; that transportation and communication have quickened our pace, bringing together, closer and closer, the ends of the earth. It is also true that science has extended the normal span of man's life on earth through the eradication or reduction of disease. But I would not say that man is any happier because of the automobile and the cinema and the radio; rather, he has substituted new forms of diversion and excitement for the physical struggle of the founding fathers, the artificiality of a mechanical civilization for the thrills of the hunt and the chase, the conquest of the wilderness.



Prospectus of a Program for the Utilization of Our Natural Resources in Conserving the Character of Our Youth.

Need of a Plan

What I am getting at is that it might conceivably be within the legitimate province of the state to guide or direct the lives of its future citizens along the ways that would tend to conserve those hardy virtues and the spirit of independence that characterized their antecedents of the pioneer days. We have in hand the materials with which to build—what we need is a plan and the will to see it through.

Some of my friends may get the impression that I am visionary—but I have only to recall to them that the early conservationists with their dreams of reforestation were consid-

ered visionary. Now behold the second growth of timber on lands that were practically denuded twenty-five years ago—behold this new growth that supplies the raw material for our expanding pulp and paper industry. If that could be done with exhausted timber areas what may we not anticipate when working with the alchemy of the imponderables? The responsive character and aspirations of our people when kindled by the imagination and inspiration of their leaders?

Let me try to visualize what I have in mind. Through some special dispensation of Providence it seems that all of the acts of Nature, from the earliest periods of geological history,

have conspired to make of Louisiana a sanctuary for the wildlife of our nation. We have seven and one-half million acres of marsh-land formed by the conjunction of our fresh and salt water, the ideal habitat of fish and game; we have set aside in Louisiana over 700,000 acres as wild life refuges; and we are constantly adding to the parks and other recreation fields for our people. But unless we devise some practical program for the utilization and enjoyment of these resources they will have little effect or influence in moulding the character of our future citizens, in the elevation of their

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THE HUNTER FIRES!



AND TWO BIRDS FALL!

Dick Leche Louisiana Sportsman

The attribute "sportsman" is subject to several connotations of varying degree of distinction—but in the case of Dick Leche it is a word that really means something.

Louisiana's governor is a "sportsman" in the sense that he not only loves the great outdoors, the sports of the open field and camp, but has recognized the obligation which is a natural complement of this form of diversion—the obligation to put back more than he takes from Nature's store-house.

Dick Leche may get a thrill from hunting ducks with his friend E. A. McIlhenry on Marsh Island, but in the excitement of a good shot from the blind he does not lose the larger vision which the sport has given him—the appreciation of recreation parks and wild life sanctuaries as a sort of antidote to the hectic life of our urban centers.

Sailing his yacht on Lake Pontchartrain in the governors' race, Dick Leche was not merely engaged in a *divertissement* that had its publicity value—steering a straight course of sane living and sound thinking it was symbolic of the true sportsman's attitude towards life.

If there is any moral to this picture of Louisiana's governor, it is that healthy outdoor exercise, a clean life in the open hours of leisure, will fit a man to do a better job of work, whether it be that of governor or just an ordinary citizen with a feeling of responsibility to society and the state.





Texas Company operations, Lafitte field, twenty-two miles south of New Orleans.

Louisiana Leads World In Deep Drilling

By
DR. J. A. SHAW

In order that the laymen may be informed of the enormous difficulties that are encountered in discovering new oil fields, let us review step by step the principal procedure and some of the obstacles encountered in these new discoveries.

The land or lease-man is first required to secure leases covering a large block of land in some locality selected by competent geologists or experienced oil operators. When this is completed, geophysical parties (usually composed of six to eight engineers and geologists) are required to thoroughly explore and survey the area selected with Torson

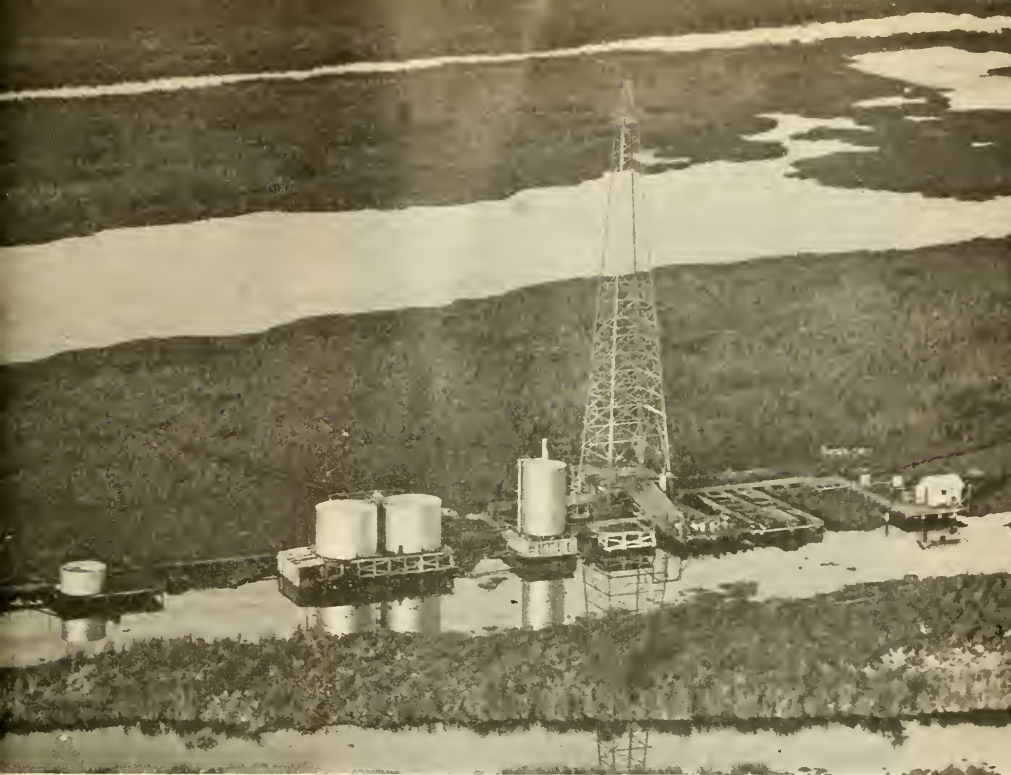
Balance, seismograph or other geophysical instruments, and in some instances, all scientific instruments that have proven of any value are used on the same prospect.

It is impossible for one who has not observed the geophysical crews in operation covering the marsh and swamp areas of Louisiana to conceive of the enormous difficulties encountered by these parties. Picture yourself laden with heavy equipment without benefit of roads or canals in mosquito infested swamps and marshes, and being required to cover every few acres in order to survey an area thoroughly. You will

then have a mental picture of what is transpiring daily in the marshes and swamps along the coast. These surveys are absolutely essential before one may hope to discover a new oil field in the territory above mentioned. The scientific operator employs the same method in the uplands of Louisiana but does not encounter the same hardships and experiences encountered in the coastal region.

Cost of Drilling

The cost of drilling an initial well in any area greatly exceeds the cost of the drilling of subsequent wells



Fohs Oil Company operations, Lake Long field, thirty-five miles southwest of New Orleans.

Wildcat Operations Successful in Louisiana--- Science Triumphs Over Tremendous Odds

after production is once discovered. In Southeast Louisiana and along most of the coast, before moving in equipment, it is necessary to dredge a canal or to construct a road one mile to three miles in length through the swamps and marshes, and then build an expensive piling foundation before beginning the erection of the derrick and drilling machinery. These operations in some instances have exceeded \$50,000.00 cost before one was ready to begin drilling, and the cost above merely represents the completion of a foundation for drilling operation. This expense plus geophysical survey and drilling the

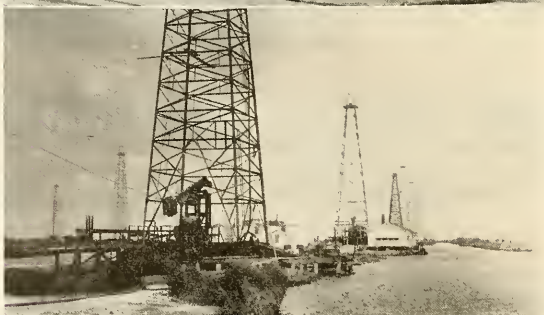
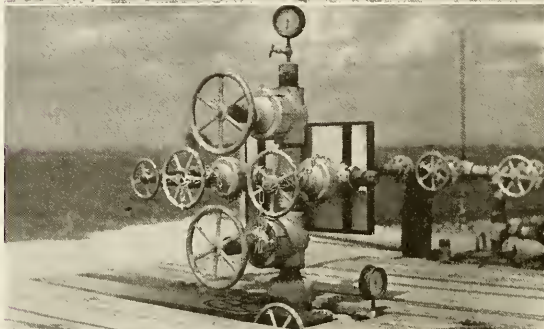
first well to a depth of ten to twelve thousand feet often bring the total cost of the initial well to three to four hundred thousand dollars; and should the operator be lucky enough to discover oil with the first attempt, one can readily see the large outlay of money necessary before discovering new production in this area.

Today it is almost a universal practice in wildcat operations to erect a steel derrick 120 feet to 136 feet in height sufficiently strong to withstand a strain or support of a maximum tonnage of many thousand tons. Unless salt or other formations below known producing horizons in Louisi-

ana are encountered, the up-to-date operator usually plans to drill his well ten to twelve thousand feet, and in some instances drilling until it becomes impossible to go deeper with the equipment used.

The "Slumberjay"

All formations must be cored after reaching certain depths and when this operation is completed, before cementing casing, the well is surveyed with an electrical device commonly called "Slumberjay." This survey indicates and shows all the oil, gas, salt water, and other formations passed through, and when com-



**CROSS-SECTION OF
SOUTH LOUISIANA PRODUCTION**
Photos by Donald E. Fuelhart—top to
bottom:

**Jeanerette field: Herton Oil Co.—
Roane No. 3—Producing well.**

**Bosco field: Superior Oil Co.—
Hernandez No. 3—Producing well.**

Cameron Meadows: General View.

**English Bayou field: Continenta
Oil Co.—Gasoline plant.**

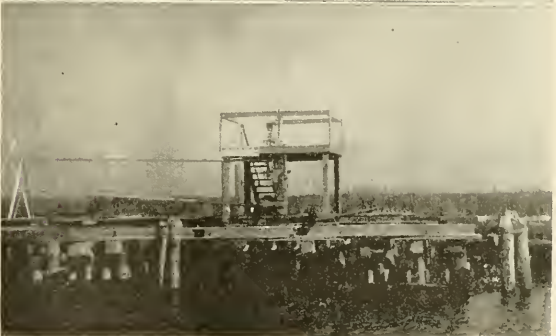
pared with the cores gives the experienced operator a fairly accurate picture of what has been encountered and at what depths while drilling. After this stage of operation has been reached, the full string of casing is then set on the bottom and cemented, filling all spaces between casing and side walls of the well to above where the first oil or gas show was discovered.

The operator is now ready to begin at the bottom show of oil and make test in all the oil and gas zones logged while drilling. By using a wire cable with electrical attachment, a high-powered specially constructed perforating gun is lowered into the hole where the operator wishes to test. Having carefully checked all measurements while drilling and surveying the hole for accurate depth to be tested, the operator is in a position to perforate his casing at the exact point desired for a test. The electrical attachment discharges the gun which perforates the casing and cement walls in the oil and gas sand logged while drilling. The water above and below, having been cemented off when casing was set, enables the operator to complete the producing well if the formation carries sufficient oil and gas to make a producer.

In the event the first test is a failure and more than one oil or gas sand was encountered while drilling, it is then a simple operation to cement the perforations made in the first test and to test the second sand and all other sands encountered in the same well and in the same manner as the first test was completed. By this method, one is able to make successful tests on all sands discovered in one drilling operation. This method of drilling and testing wells is practical in all parts of

Louisiana and is coming into almost universal practice.

With the discovery of production in the Glen Rose and lower marine sections in North Louisiana, a drilling campaign was started which embraces the whole northern half of the state and makes that entire area potential oil and gas bearing from these zones. While the general practice at the present time does not require wells in North Louisiana to be drilled as deeply as those in the coastal area, the cost is relatively the same once the operator has spudded in his well, owing to the older and harder formations encountered while drilling to the producing formation.



Cotton Valley Field

Commercial wells drilled 8,200 feet to 8,500 feet in the Cotton Valley Field, Webster Parish, are now being completed with consistent regularity. This, coupled with known producing sands below this depth, foretells a long and continuous drilling program that will be required to fully develop and exhaust the production in that section.

A certain portion of Central Louisiana across the state has never produced very much oil or gas, but there is not one geological or common sense reason why every parish in this state should not eventually be listed in the production columns.

Louisiana today leads the world in deep drilling operation with fifteen wells now drilling from nine to twelve thousand feet, which show a much larger percentage of deep holes than any other state when compared with the total operations being conducted.

This article is not intended in any way to frighten the oil men who are not thoroughly familiar with the re-

CROSS-SECTION OF SOUTH LOUISIANA PRODUCTION

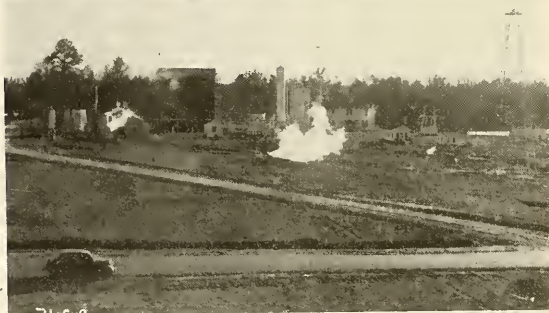
Photos by Donald E. Fuelhart—top to bottom:

Caillou Island field: Texas Company—loading oil from storage tanker into barge.

Lafitte field: Texas Company—drilling on drilling barge.

East Hackberry field: Stanolind Oil & Gas Co.—state lease.

Bayou Des Allemands field: Amcrada Petroleum Co.—State No. 1 Discovery well.



**CROSS-SECTION OF
NORTH LOUISIANA PRODUCTION**
Photos by Donald E. Fuelhart—top to
bottom:

Redessa field: Union Producing
Co.—Separators and tank battery—
Mattie Pitts lease.

Glen Rose gasoline plant.

Tidewater gasoline plant.

United Gas Public Service Co.
gasoline plant.

cent development of Louisiana's oil and gas possibilities—on the contrary, the Department of Conservation is cooperating and will cooperate with the legitimate operator to have the state developed with the smallest number of wells that will properly drain the structures and domes and recover the maximum amount of oil and gas with a minimum amount of waste. We are all familiar with the wasteful practice of the oil fraternity in the rapid rise of the oil business to the third largest business group in the world, and if this great natural resource is not conserved by the state and the national governments, these United States will soon find themselves depending upon foreign oil to keep the wheels of our industries and the wheels of our automobiles turning.

In conclusion, the Department of Conservation of Louisiana invites all legitimate operators and investors to visit this state, to make a thorough investigation of its oil, gas, sulphur, and salt resources, and to become a factor in developing what is generally believed to be the greatest remaining undeveloped oil and gas reserves left in the United States for the comparative size of the area covered by the State of Louisiana.

Woodstain From Lignite

A colloidal form of lignite which remains indefinitely suspended in water has recently been put upon the market as a water soluble woodstain. When in proper concentration, it is applied to new wood, the wood is stained a deep brown color which is permanent to sunshine. In the commercial form some water soluble aniline colors are added to the dry colloidal powder with the result that pleasing decorative effects are obtainable for wood staining and shading in a dozen or more tints.

UNIQUE INDUSTRY WILL BE DEVELOPED

Organization of the Louisiana Boganite Corporation to develop fuller's earth deposits near Bogalusa is expected to add millions of dollars to Louisiana's income from its natural resources.

This fuller's earth can be used as a drilling mud in drilling oil and gas wells, as shown by tests which have been made in laboratories of some of the major oil companies. All of the drilling mud used in the oil and gas wells now being drilled in Louisiana is shipped into this state. With this drilling clay from deposits near Bogalusa now available Louisiana will begin furnishing its own clay for the drilling of well.

The corporation was recently organized with Mark P. Seirsdale of Bogalusa as president; Philip J. Liuzza of New Orleans and Bascom D. Talley of Bogalusa, vice-presidents; and Lachlan M. Vass of New Orleans, treasurer.

Other members of the board of directors are Arthur J. Brandin of New Orleans, Ralph Earl of New Orleans and O. J. Sherman Stupka, Charles Goodyear, Jr., and N. H. Seirsdale, all of Bogalusa.

About 24 years ago O. J. Sherman Stupka, a resident of Bogalusa, and for many years fire chief of that city, was picnicking on the banks of Bogue Lusa creek with a friend. The discovery was made when the two friends saw that mossy growth had been displaced by water trickling down the hill on the side of the creek. Noticing what appeared to be a whitish looking claylike substance, he reached over the bank and dug out a small piece of the material

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CROSS-SECTION OF NORTH LOUISIANA PRODUCTION

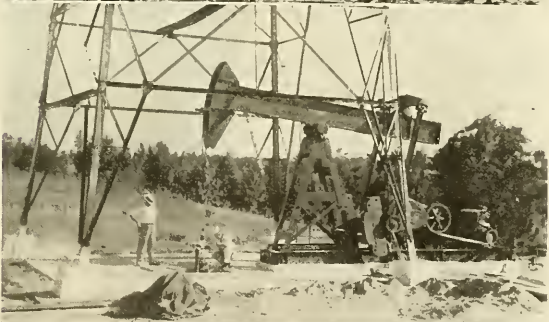
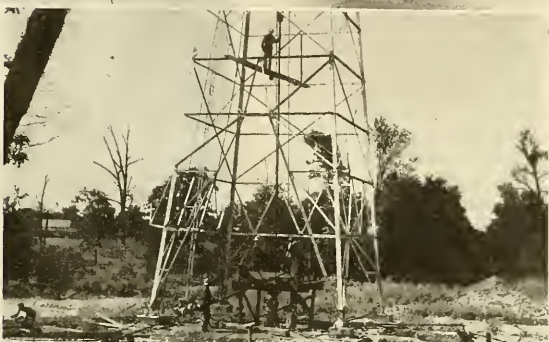
Photos by Donald E. Fuelhart—top to bottom:

Caddo field: Texas Company on Jeems Bayou—cleaning up lease.

Lisbon field: Gulf Refining Co.—Patton No. 2 well—rigging up to pump.

Lisbon field: Tippet Drilling Co.—Aycock No. 1—drilling.

Sligo field: United Gas Public Service Co.—Skannal B-1—running tubing under pressure.



Subsurface Disposal Of Oil Field Brines

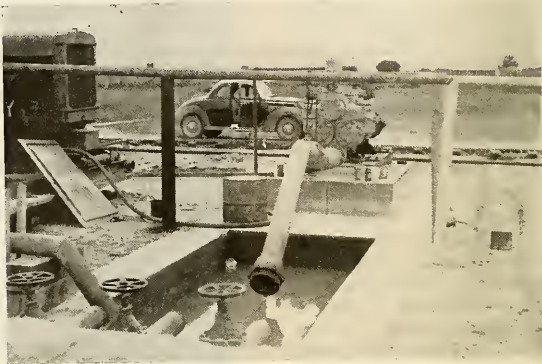
An interesting development in the solution of Louisiana's pollution problem, the subsurface disposal of oil field brines, is outlined in a circular recently issued by Commissioner William G. Rankin of the Department of Conservation, based on a special report of Donald E. Fuelhart, petroleum engineer of the department.

The disposal of salt water produced with the oil in South Louisiana fields is a serious problem because of possible pollution. Agriculture as well as commercial and recreational fishing is damaged by the pollution of fresh water bodies, the rice crop in particular being dependent on irrigation from fresh water bodies. It is also claimed that damage is done to the shrimp, crab and oyster fishing industries along the Gulf coast by contamination of oil field brines.

Irrigation Setup

In many cases the oil field brines are stored in earthen pits or reservoirs in or near the oil fields, to be released by natural drainage in winter months when the rainfall is sufficient to cause dilution to such an extent that pollution is greatly lessened. Irrigation is not practiced in winter months. However, in some cases the storing of oil field brines in open pits has become impractical because of the volumes to be stored. This increased volume may be due to the natural influx of salt water as the oil is withdrawn from the reservoir, and in some instances the greatly increased volumes are no doubt due to having produced oil at a too rapid rate in the past and failure to take corrective steps to shut off the salt water in the wells.

Storing of salt water in reservoirs or pits is almost prohibitive in marsh areas because of the cost, and is often unsuccessful because of seep-



Subsurface pit and pump, Union Sulphur Co., Big Lake field, Cameron Parish.

age through and beneath the earth dykes of the reservoir.

Subsurface Practice

In South Louisiana the practice of disposing of the oil field brines by pumping them back into subsurface reservoirs through a well was first inaugurated by the Texas Company in the Lake Barre field in November, 1933. In August, 1935, the Union Sulphur Company started their subsurface salt water disposal operation in the Gillis field; and in November, 1936, the Texas Company operated their disposal plant in the Caillou Island field.

During the months of May, June, July and August, 1937, five additional plants for the subsurface disposal of oil field brines have been put into operation, making a total of eight fields that now employ this system. In the Bosco field the Superior Oil Company is now disposing of 15,000 barrels of salt water daily.

The Superior disposal well was drilled to a depth of 3,498 feet, the injection sand being reached at a

depth of 3,223 feet. From 725 to 775 pounds of pump pressure are required at the well head. The operation began on May 14 of this year and over two million barrels of salt water had been disposed of on November 1.

According to the report of Mr. Fuelhart, this method of disposal of oil field brines is very practical in the Gulf coast area of South Louisiana. Operators are required to obtain a permit from the Department of Conservation to drill a well for salt water disposal, although no fee is charged. In case a well which has already been drilled is to be used as a disposal well, approval of the department must be obtained before proceeding with the operation.

Disposal Plants

The salt water disposal plants now in operation are those of the Union Sulphur Company in the Gillis field; the Shell Petroleum Company in the Iowa field; the joint operation of the Magnolia Petroleum Company and

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Louisiana's 'Paying Guests'

A Forty Million Dollar Industry

By
ERNEST LEE JAHNCKE

During the past year we have heard a great deal about Louisiana's industry and industrial expansion, and this is hardly surprising; for in that period we have made notable progress toward the attainment of our proper place in the world of industry, and we are now—for the first time in our history—on the way to deriving the full benefits of our great stores of natural resources. In this progress we have been ably guided by Governor Leche, who is working with the conviction that industry, as well as the individual, thrives under the application of the "golden rule".

The success of the Governor's methods is apparent in the great gains that have been made. In a little more than a year almost one hundred new factories, or important additions to existing factories, have come to our state. With them have come the benefits of increased employment, larger payrolls, and greater purchasing power. New commercial vistas are being opened, new machinery is in operation, and new opportunities are arising; the wheels of industry have quickened, after too long running at indifferent speed.

But in the midst of this era of new factories, new machinery, and the intensified development of our natural resources, we must not lose sight of one of our resources which is neither new, nor is it an industry. When I say that this resource is not an industry, I mean that in the strict sense of the word, for its financial importance to the State certainly places it upon as high a plane as some of our greatest industries. The resource I have reference to is our annual army of distinguished guests and patrons—the tourists.

No one should underestimate the value of tourists to a state. Just how valuable they are to our own State is well brought out in an analysis

made by the Travel Bureau of the Continental Oil Company. Comprising their report are statistics that cannot fail to interest anyone concerned in our progress. The most arresting figure of the report is the amount of money spent by visitors to Louisiana during 1937—no less than forty million dollars! That is an impressive amount certainly, and it be-



ERNEST LEE JAHNCKE
Executive Director, Dept. of
Commerce and Industry.

comes even more impressive when we realize that it is more than half the value of our entire cotton crop, and is almost twice as great as either our rice or sugar cane crops. In fact, we have in this figure the evidence that the tourists are our second greatest "crop", and we also have the broad hint that it is a crop we can well afford to cultivate.

2,000,000 Visitors During 1937

Carrying the subject farther, the report estimates that more than two million persons visited Louisiana last

year. Of the forty million dollars they spent, 25 per cent of that amount went for retail purchases; 21 per cent went for food; 20 per cent for lodging; 20 per cent for transportation cost; eight per cent for amusement; and six per cent for refreshments and confections purchased along the highways.

From this we can see that our tourists not only spend a great deal of money with us, but they spend it in the way that benefits the greatest number of people—they distribute it among a variety of businesses, and a great many individual business owners; and it thus affects a whole host of employees. AND, what is perhaps the most significant fact of all—the tourist business, in the great majority, is necessarily cash business.

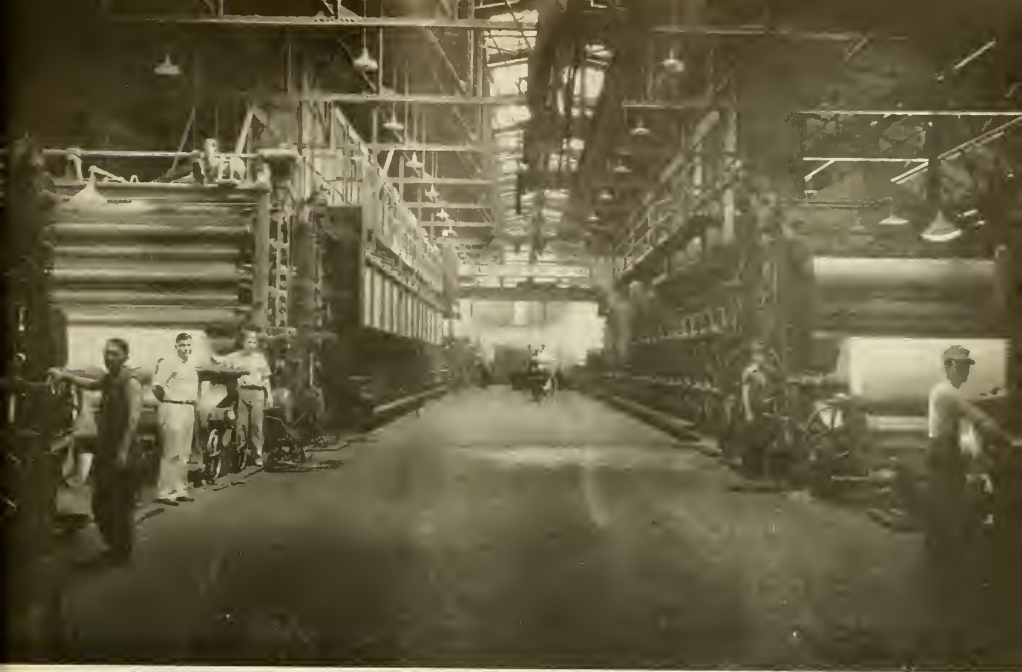
The logical conclusion to be drawn is that our tourist business is a decided asset—an annual forty million dollar investment—and we should treat that investment and the investors with the same care and consideration they would receive in private business. We should work assiduously to preserve the stock-in-trade and the good-will that engenders the business, and we should attempt in every way possible to increase it.

There are a number of different ways in which those objectives can be attained. It is well known that "the way to a tourist's heart is the highway". With good roads a state has the one positive device for attracting both near and remote visitors; on the other hand, with poor roads it has the most formidable barrier against all visitors. Fortunately we in Louisiana do not have to worry about roads. Through the tireless efforts of the late Senator Long, we have here a splendid highway system over which the motorist can drive

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Showing barked pulp logs on way up conveyor from barkers to chippers.



View down the alley between mill's two Fourdrinier machines.

From Forests To Paper

Utilization of Waste and Reforestation
Pay Dividends---Behind the Scenes in One
of the World's Great Paper Mills.

By
GEORGE W. MITCHELL

The great stride that industry has taken in the past few decades is due, in large part, to exhaustive research into the more efficient use of Nature's resources. In industry's Yesterday, supposedly waste materials were thrown into the discard-materials which now stiffen the financial backbone of industry in the form of valuable by-products. Tireless study has resulted in the utilization of raw materials to a degree which was undreamed of a relatively few years ago. The paper industry, in which such careful husbandry is a paramount necessity, has more than kept pace with this movement.

The Bogalusa Paper Company was, in fact, born of rebellion against the waste of industry's old regime. In 1905, in Washington Parish, Louisi-

ana, the Great Southern Lumber Company was founded and equipped with machinery that sustained its boast of being one of the greatest sawmills in the world. Three years later the company erected what was to become the outstanding landmark in the then small town of Bogalusa—a huge refuse burner. This mighty furnace has since been demolished but the inscription that it bore for several years tells more dramatically than might any other words the story of the founding of the Bogalusa Paper Company.

Epitaph of The Incinerator

Huge letters on the side of this incinerator proclaimed: "BORN: October 1, 1908; DIED: July 4, 1924.

Everyday during my life of sixteen years I consumed daily 560 cords of waste material or a total of 2,688,000 cords. It cost \$25,000 to build but my fire has destroyed \$1,344,000 worth of what was formerly considered waste. The complete utilization of the sawmill refuse in the manufacture of paper has my fire forever extinguished."

Before launching on a history of the development of the Bogalusa Paper Company, the value of this "utilization" of wood can be made clear by a relatively brief recital of the fundamentals of the paper-manufacturing process as it is practiced in the southern states on coniferous woods. Known as the "sulphate process", a name derived from the use of sodium sulphate (salt cake) to make

up the losses of chemicals in the stages of manufacture, its product has become generally known as "kraft" paper, a term which, in Swedish, denotes "strength".

Yellow pine, used almost exclusively in the southern states, is brought to the mill in lengths from four to six feet and in diameters ranging from six to twelve inches. Removing the bark from the logs, the initial step in the process, is accomplished in the barking drums. These are skeleton steel cylinders from 12 to 14 feet in diameter and ranging from 20 to 45 feet in length. Set as they are at a slight incline and turning at the rate of about ten revolutions per minute, these drums tumble the logs against each other until, through the pull of gravity and the pressure of the incoming wood, they are discharged at the lower end, the bark almost completely removed.

In order to facilitate the pulping action of the cooking agent on the wood it must be reduced to chips of approximately uniform size. This is accomplished by feeding the barked logs into a chipper which consists essentially of a large, rapidly revolving disc in the side of which are bolted knives. These knives, projecting slightly from the face of the disc, slice off the chips and these, in turn, fall into vibrating screens where they are graded according to size. From here the accepted chips are conveyed to chip bins for storage, while the larger chips are fed to a breaker where they are reduced to the correct size.

The "Digesters"

From the storage bins the chips are led by gravity into digesters, great steel vessels in which the chips are cooked, or reduced to pulp. When the digester is filled with chips, the liquor, or cooking agent, is admitted and the digester is then capped and charged with steam. In the sulphate process, the main constituents of the cooking liquor are sodium hydrate and sodium sulphide, the action of which dissolves the non-fibrous components of the wood. After the chips have been cooked from three to four hours,

the pressure on the digester is relieved. The steam pressure forces the pulp through a cyclone which allows the steam to escape into the atmosphere and from which the pulp is dropped into diffusers, or large washing tanks. After the liquor is washed from the pulp, the diffuser charge is dumped into a stock chest beneath, where an agitator keeps the fibres in suspension in water. From here the stock, as it is known in this stage of the process, starts on a long journey, conveyed in seemingly endless networks of pipe through the several further refining processes to which it is subjected before it finally flows onto the paper machine.

All paper machines are, with slight variations, of two types—the cylinder



Showing the chippers in the wood room and, below, the chip screens in which the chips are graded for size.

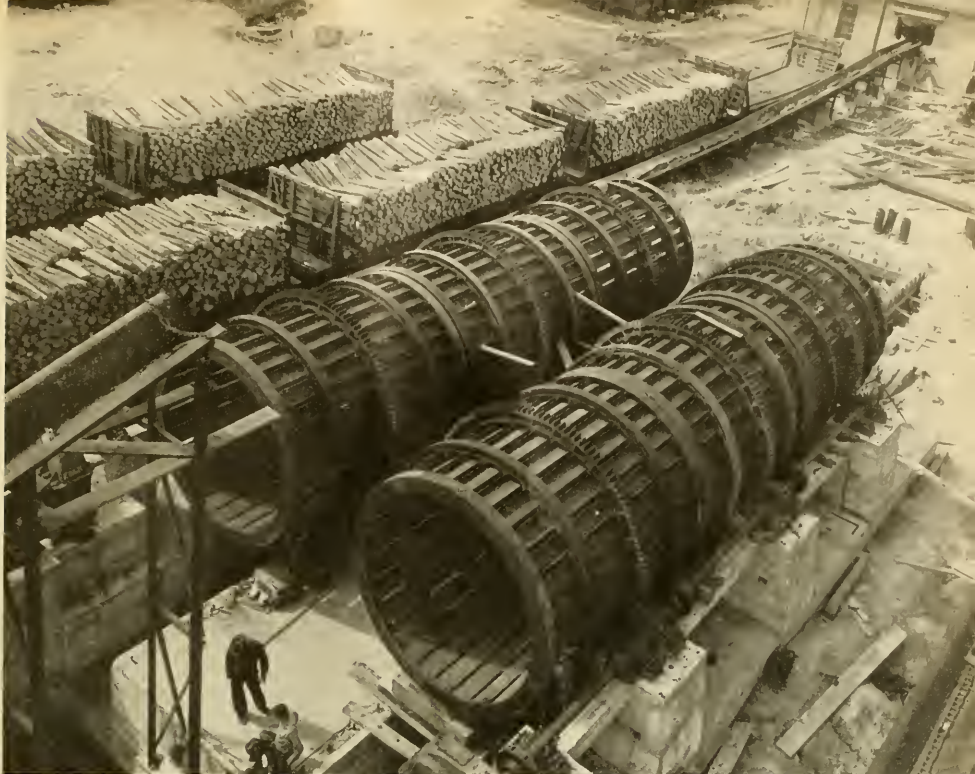
machines and the Fourdrinier machines. In the former, the stock, or wood fibres in suspension in water, flows into a series of vats in which cylinders, covered by wire of fine mesh, rotate on a horizontal plane. As the cylinders rotate, the wire picks up the fibres and deposits them uniformly on the bottom of an endless belt which serves to carry the sheet through a series of presses, extracting much of the moisture in it. There is, at this stage, enough substance to the sheet to allow it to pass unaided onto the dryer section of the machine where the remainder of the moisture is removed from the sheet as it passes over stacks of steam-filled cylinders.

Fourdrinier machines, many of which now operate at speeds in excess of 1,000 feet per minute in the manufacture of kraft paper, differ in principle from the cylinder machines chiefly in the "wet end." In this type the stock flows evenly onto an endless wire which runs parallel to the length of the machine. As the wire travels forward the fibres are, by mechanical means, made to settle together to form a sheet on the upper side of the wire. Water drains down through the wire and is also drawn out of the sheet as the wire passes over a series of suction boxes. As it leaves the wire, the sheet passes onto a felt which conveys it through suction and press rolls, the principles and purposes of which are essentially the same as those on the cylinder machine. As the sheet made on the Fourdrinier machine is generally much lighter and more fragile than that made on a cylinder machine, a canvas cloth, known as a dryer felt, is used to convey it over the dryers. With this exception the dryer sections of the two types of machines are almost identical.

Recovery of The Liquor

A rough outline of the paper-making process has been given above, but of equal importance is the recovery of the liquor, or cooking agent in the manufacture of the pulp, for if the reclamation of a high percentage of the original constituents of the liquor were not possible, the manufacturing costs would be prohibitive.

This liquor, as it is discharged from the diffusers or washing tanks, contains a high percentage of water. To concentrate the spent liquor, it is pumped through multiple-stage evaporators. In its more highly-concentrated state the liquor is combustible, a fact which enables modern pulp mills to operate with a high degree of efficiency because of its embodiment in new recovery units. Sodium sulphate (salt cake) is added to the concentrated liquor as it is fed to the great furnaces, to replace the spent chemicals. These new units serve the two-fold purpose of generating power from the heat of combustion of the liquor, and of reducing the liquor into



Showing the barking drums in which bark is removed from the pulp wood logs. (Photo taken during installation).

the liquid, molten form in which it flows into tanks to be dissolved in weak liquor. As the liquor reaches the desired strength, it is pumped to the causticizing department where lime is added to it. This latter reaction is necessary to convert the practically worthless sodium carbonate into sodium hydrate, already mentioned as one of the most active components of the cooking agent.

In many mills, as at Bogalusa, the sodium carbonate sludge which settles to the bottom of the causticizing tanks is burned in large rotary kilns to convert it again into usable lime.

Turpentine Production

Turpentine is, at present, produced in the greatest volume among the by-products obtained in the pulping process of resinous woods. The first step in its manufacture is the condensation of the relief gasses from the digesters, yielding almost 50 percent turpentine by volume. This crude product is fur-

ther refined by fractional distillation, resulting in a colorless and scentless product that compares most favorably with turpentine derived from any other source. The Bogalusa Paper Company is equipped with turpentine distilling apparatus with a rated annual capacity of 250,000 gallons.

Although the site for the Bogalusa Paper Company's plant was originally chosen because of its proximity to the source of "waste" raw material from the parent Great Southern Lumber Company, the subsequent rapid industrial expansion within the state of Louisiana has proven the choice of location a happy one. The company has, for years, enjoyed the mutual benefits derived from close cooperation with the Department of Conservation and the latter's reforestation program has had much to do with the success of the paper industry in the state.

At present, the company's pulpwood requirements are satisfied from with-

in a radius of 200-250 miles from Bogalusa, much of which lies in the southeastern section of the state. The company's own holdings of pulpwood stands are located within a radius of 100 miles of the mill and consist of approximately 260,000 acres of reforested land, situated principally in Washington, St. Helena and Livingston Parishes. Although timber on these reforested lands is being thinned out as the trees approach the desirable size for pulpwood, at present the mill's requirements (approximately 500 cords a day) are being met almost exclusively from outside sources.

Hand-Planted Tract

Included in these 260,000 acres is one of the largest private tracts of hand-planted trees in the United States. In 1920, eight hundred acres were planted in pine seedlings by the Great Southern Lumber Company, with subsequent addition until 1931, bringing the plantation to its present

size of 30,000 acres. The balance of the acreage held by the company is the result of natural reforestation.

An idea of the value to the state of its natural timber resources may be gleaned from the fact that the Bogalusa Paper Company alone, at its present production schedule, buys almost \$1,000,000 worth of pulpwood annually, most of it from private pulpwood contractors in the state. This figure is, of course, multiplied several times by the other paper mills in the state.

Louisiana also abounds in other raw materials indispensable in the manufacture of sulphate pulp and paper and in modern, large industrial plants engaged in their processing. The salt cake, lime and soda ash consumed in the mill account for an annual chemical bill of almost half a million dollars, a considerable portion of which is spent within the state. In addition to lime bought on the open market, more than 30 tons a day are recovered by the company's two kilns from the "sludge" mentioned earlier in the account.

500 Tons of Paper Daily

At present the mill is operated on a productive schedule of approximately 500 tons of finished paper a day, 275 tons of which is the product of and the improvement of established

the four cylinder machines and the remainder that of the two Fourdrinier machines. The tonnage of the paper mill is made up of liner board, corrugating material, wrapping and bag paper, board and paper specialties.

The Bogalusa Paper Company is, to a substantial extent, self-sustaining in the source of its power, part of it being derived from the waste heat boilers in the pulp mill and some from furnaces in the power house in which cutting from the nearby sawmill and bark from the pulp logs are burned. An average of 400 tons of this wood refuse is burned per day, accounting for about 15 percent of the steam generated in the company's power plant.

Situated as the Bogalusa Paper Company is, only about 80 miles north of New Orleans, it enjoys the advantage of water transportation rates from this port, either by the great inland waterways system of the Mississippi or by coastwise steamship service. Also, the plant's location on the Gulf, Mobile and Northern railroad allows convenient routing of its shipments over all of the large southern, central and western lines.

Finally, exhaustive research into the development of new by-products products and manufacturing methods has long been a factor in the Bogalusa

Paper Company's success. And the continuation of this program, coupled with the easy accessibility of major markets and the abundance of Louisiana's natural resources assures this company a place well in the van of the south's most rapidly expanding industry—an industry in which this mill was one of the Louisiana pioneers.

Dogs and Conservation

Dogs play an important part in efforts to keep American wildlife from "going to the dogs."

The canines which are such a factor in the conservation movement are retrieving gun dogs—pointers, setters or spaniels,—intelligent animals that have been taught to bring back to their owners anything but a sizzling stove lid under the proper conditions. Their use by sportsmen practically eliminates unintentional, unnecessary killing of game and does away with suffering on the part of wild animals and birds.

"If all sportsmen used gun dogs that are good retrievers there would be practically no unintentional useless killing," says Henry P. Davis, a noted sporting dog authority and Secretary of the American Wildlife Institute, which is directing a general conservation movement.

"In shooting without a retrieving dog it often happens that a sportsman fails to recover birds shot down. Without the aid of a good dog, it is often impossible to pick up crippled game. Then we have the injured animal or bird dragging itself away to die a lonely death, something that every true sportsman seeks to avoid."

All this can result in much unnecessary depletion of game," points out Davis. "If a sportsman recovers all his game and bags the limit, then he has taken only his lawful share. If he fails to recover a dead bird or animal or allows it to get away crippled to die later, then he has really killed more than his share. Such waste depletes the game supply."



View of beaters, in which the pulp is subjected to one of the refining processes.

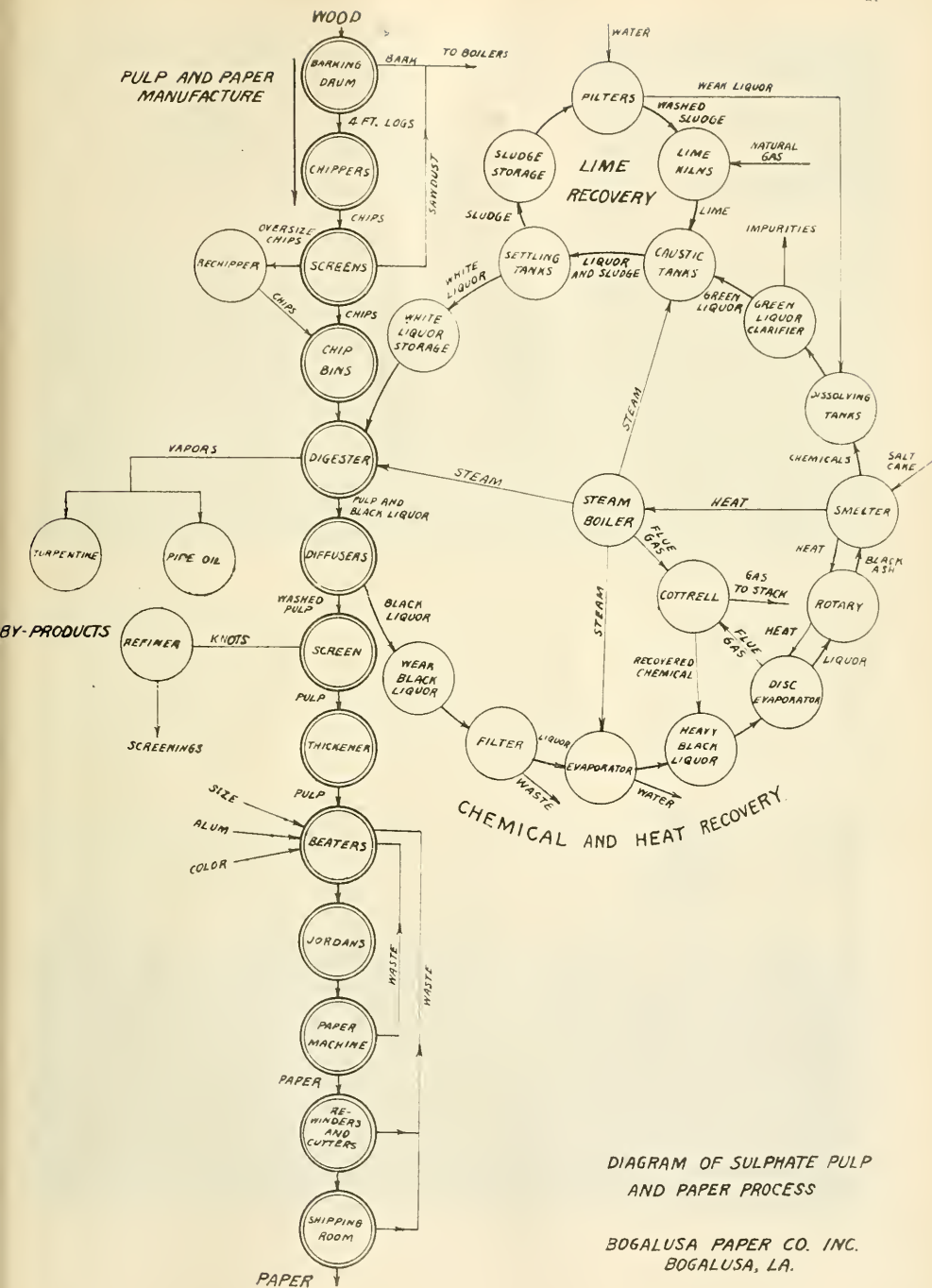


DIAGRAM OF SULPHATE PULP
AND PAPER PROCESS

BOGALUSA PAPER CO. INC.
BOGALUSA, LA.

Controlled Pulpwood Cutting

CONSERVATION RULES, SOUTHERN PINE PULPWOOD INDUSTRY

Probably one of the outstanding features of reforestation in the South has been the voluntary action of the Southern Pine Pulpwood Industry of the American Pulpwood Association in establishing rules and regulations for the proper cutting of pulpwood on lands belonging to the Southern farmers and other landowners.

This is probably the first time in the history of the South that a large forest products organization has called all of its members together and invited the State and Federal Foresters to participate in establishing procedure for cutting second growth pine lands properly. The greatest danger in cutting second growth timber is the inclination of contractors and landowners to strip their lands in its entirety so as to get every dollar available. When making these complete cuttings, the landowner does not realize that the lands cannot come back

rapidly and that they must be either artificially planted or wait for a long time for natural reseeding. Such complete cutting causes a hardship on both the landowners and pulpwood industry because both lose on a crop of timber that should be maintained as a perpetual growth.

The paper industry with its large investments built on a long term operation realize the seriousness of this situation and have not waited for outside assistance to regulate pulpwood cutting procedure on second growth land, but called in all the members and established the first steps for a perpetual growth and a continuous operation.

Due to the vast differences existing in the Southern pine belt from the State of Texas to the Atlantic, it is rather a task to set up region-wide rules applicable to all sections of the South. The Southern Pine Pulpwood

Industry therefore broke up its region into four groups and each group established instructions on how to cut the second growth timber in their respective areas. At Jacksonville on December 6, 1937, the pulpwood industry, State Foresters and United States Forest Service members met to review the cutting instructions of the four groups, and as a result cutting rules were accepted for all four regions and are as follows:

CUTTING AND CONSERVATION RULES, SOUTHERN PINE PULPWOOD INDUSTRY

Approved at a Meeting of the Coordinating Committee Held in Jacksonville December 6, 1937

1. Fire Protection:

We recognize the necessity of complete and absolute fire protection as a fundamental for the success of forest conservation in



A sample of over-cutting. Many years involved before a new crop of timber can be obtained.



Showing seed trees and saplings left after pulpwood cutting.

this region; therefore, the companies concerned will give full cooperation to State and Federal fire protection agencies, including the working for adequate Federal and State funds for fire control work.

2. Growing Stock:

Loblolly and Short Leaf Area Cutting Practice:

a. Selective or Partial Cutting: We recognize that partial cutting designed to maintain and improve the forest growing stock is highly desirable practice and will use every practicable means of securing the adoption of such practice.

b. As a first step in carrying out this policy, no trees under 8 inches in diameter at stump (12 inches above the ground) will be cut, except for stand improvement purposes:

(Note: Stand improvement consists of the removal of defective or damaged trees and necessary thinning for improved growth.)

c. If partial cutting is not practiced, not less than four (4) seed trees per acre, well distributed over the area, will be left unless the area is already well stocked with young growth. A seed tree is defined as a thrifty tree with a well formed crown and not less than 8 inches in diameter, d. b. h.

Intensive Naval Stores Area (Turpentine Pine) Cutting Practice:

a. Cut worked out turpentine trees and non-turpentine pines.

b. Cut no round or one-faced turpentine trees, except such as are defective or where thinning is needed.

c. Thinnings may be made so as to leave not less than 50 trees per acre 6" to 9" at the stump, outside of bark, as well distributed as possible.

d. At least six thrifty seed trees per acre shall be left unless sufficiently young growth (150 trees 6 to 8 feet high) are present.

e. Clear cutting on restricted areas may be done with the approval of the State Forester. This applies only to long leaf and slash pine.

3. Utilization:

Defective, badly formed or damaged trees, worked-out turpentine trees and tops from sawtimber operations will be utilized to the fullest practicable extent.

4. Cooperation with State Foresters:

We will work out on the ground with the State Forester such practices as may fit the local situations.

5. Enforcement:

Each company represented agrees to secure, insofar as possible, full compliance of its wood producers with the procedure of forest practice established.

6. Educational and Demonstration Work:

a. We recognize that the permanent success of our efforts to
(Turn to Page 26)

Growing Forests The Hard Way

By

V. H. SONDEREGGER

During the years 1904 to 1908, the Great Southern Lumber Company organized a large sawmill enterprise at Bogalusa, Louisiana, with vast timber holdings in both Louisiana and the adjacent State of Mississippi. The largest sawmill in the world was constructed, cutting a maximum capacity of one million feet of pine a day when market conditions warranted the same. Ten years later the Great Southern Lumber Company, through its General Manager, Mr. W. H. Sullivan, became interested in the reforestation of cut-over pine lands. At the rate of this tremendous cutting the company realized that some disposition must be made with its cut-over lands.

After visiting many reforestation projects in the South, the Great Southern Lumber Company became convinced of the feasibility of rebuilding its cut-over lands to future forests. A definite plan of reforestation was formulated and was necessary because the Bogalusa Paper Company, a subsidiary of the Great Southern Lumber Company, had been established in 1916. It had been planned that the paper company would use the waste material left behind by the logging operations, but this plan did not assure future supplies, and it became necessary for the paper company, as well as the lumber company, to plant for future crops of timber.

There was no precedent established for a definite plan of reforestation in the South. Protecting lands with seed trees had been practiced and had proven successful, but the Great Southern Lumber Company had a problem that was beyond the precedent of any forest practice, namely, thirty thousand acres of denuded lands which had no seed trees and

which had no possibilities of coming back as a new forest. There was but one solution to this problem and that was a plan of planting thirty thousand acres with suitable pine trees under suitable conditions and proper spacing. The State Forester of the Department of Conservation and Dr. Austin Cary of the United States Forest Service called in a consultation for the development of a definite forestry plan. Dr. Cary and the State Forester of the Department of Conservation, after many field visits and deliberations, submitted a program of planting to the Great Southern Lumber Company which was adopted and started in the years of 1920 and 1921. The program was undertaken by the Great Southern Lumber Company and under the supervision of the Department of Conservation with the valued experience and advice of Dr. Austin Cary.

The First Project

The first project constituted the fencing of eight hundred of acres of denuded lands, plowing furrows eight feet wide, and sowing pine seed on the upturned furrows. This was something new in the South and the first attempt of its kind, sowing pine seeds to reproduce future timber growth. This project materialized to a very satisfactory point, but the spacing of the trees were bunched and irregular and not very satisfactory from a timber growing standpoint. In addition, a large amount of seeds were consumed by rodents and bird life.

The following year seedlings were obtained from the woods, known as wild stock, and planted one thousand to the acre. This method, although an improvement over broadcasting of seed, again was not satisfactory, be-

cause the seedlings lifted from the woods were not strong enough to stand the shock of removal and a large per cent died. However, the Great Southern Lumber Company was well pleased with the initial steps that had been taken in rehabilitating the large area of thirty thousand acres of denuded lands. In 1922 the State Forester was called to Bogalusa and asked if it was possible to raise one million seedlings for Fall delivery. There were no records of any nurseries in the Gulf States that had raised such a quantity of seedlings. The State Forester of the Department of Conservation and the Great Southern Lumber Company employees established a pine tree nursery in the City of Bogalusa in March of 1922, with an objective of raising one million pine seedlings. The judgment of both Mr. W. H. Sullivan and the Foresters was justified, as the crop that Fall resulted in over one million, two hundred thousand seedlings which were all planted on twelve hundred acres, one thousand to the acre.

The results of this undertaking were highly satisfactory and the records show that 92 per cent of the seedlings survived, and plans were then made the following years to plant thirty thousand acres of denuded lands, or a total of thirty million pine seedlings, spaced six by eight feet, or an average of one thousand to the acre. This program was completed eight years later with the objective of the thirty thousand acres planted.

With the beginning of the nursery and planting, the Great Southern Lumber Company established a Forestry Department with a Forester as supervisor, and rangers and wardens cooperating with the State employees, with the program of (a) protecting



WINTER, 1938

all of its lands against forest fires; (b) changing the cutting method, leaving seed trees of various sizes and numbers to every acre; (c) and a definite planting program for all of the denuded lands within its holdings.

30,000 Acres Planted

There is no other organization in the Southern States that has attempted reforestation on such a large scale as has the Great Southern Lumber Company, and particularly the unbelievable task of planting thirty thousand acres of denuded lands with a new forest. The story of this project can probably be better explained by the pictures which are herewith incorporated in the story.

The top picture shows a type of completely denuded land that existed in 1920, a total of thirty thousand acres. In the background it will be noted that the young seedlings which are one year old are just above the grass.

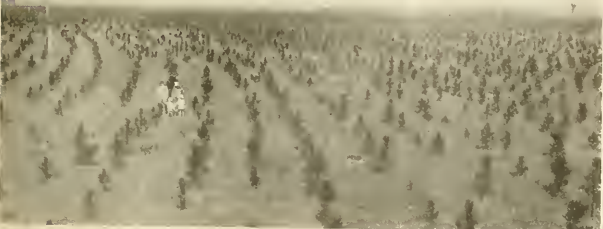
The picture next to the top shows the same area three and one-half years of age. It also will be noted that Colonel W. H. Sullivan and Mrs. Sullivan and their two children are in the background. This particular area was dedicated to the memory of Colonel W. H. Sullivan who died soon after the picture was taken.

The center picture shows the same area at the age of five years. Attention is called to the monument in the background in memory of Colonel W. H. Sullivan, which monument was placed on the identical spot on which Mr. Sullivan's picture was taken one and one-half years earlier.

The picture next to the bottom represents the same area at seven years of age.

The bottom picture represents the safest and easiest method of rebuilding forest lands. It will be noted in the background that seed trees had been left standing, the entire area has been protected against forest fires, and an intense growth of longleaf pine seedlings is the result.

In the bottom panel of our front cover the same area is shown at eleven



years of age, with a total content of seventeen cords of pulpwood to the acre. This area in the majority was planted with slash pine timber.

These pictures represent one of the most difficult projects in forestry, namely, growing timber from planted seedlings.

With reference to the cover picture, this is the ideal and objective of practical reforestation. Leaving seed trees, protecting the area against forest fires with efficient men and standard equipment will result in a new forest which in the future will not be denuded but will be handled on a sustained yield basis, permitting the cutting of timber in cycles or period of years and only cutting a part of the stand and keeping the timber lands in a continuous cutting condition for perpetual operation of the forest products industry, and thereby eliminating the "Hard Way" of building a forest by completely denuding the area and planting it by hand with nursery-raised seedlings.

CONTROLLING PULPWOOD CUTTING

(Continued from Page 23)

promote good cutting practices on non-company lands will depend on changing the present attitude of many such landowners, and we urge that the Federal and State forestry agencies undertake an enlarged campaign of education and demonstration.

b. It is urged that the Superintendents of Public Instruction in the various Southern States take steps to add forestry as a part of the agricultural teaching in rural high schools, white and colored.

7. Future meetings:

Future Meetings of the Southern Region shall be held at the discretion of the Coordinating Committee.

8. Period of Cutting:

No pulpwood cuttings shall be made over the same area more often than once in five years, except to salvage damaged material.



Louisiana's Exhibit At Exposition of Chemical Industries

Louisiana's exhibit at the 16th Exposition of Chemical Industries, at the Grand Central Palace in New York December 6-11, elicited much favorable comment from the thousands of daily visitors. It was the only state exhibit, the important role of chemistry in the industrial development of Louisiana adding to the interest of executives, engineers and others who occupy positions of responsibility in the North and East.

The exhibit was prepared by the Department of Conservation at the request of Ernest Lee Jahneke, of the Board of Commerce and Industry. It was assembled by W. F. Chisholm and C. L. Davis, Jr., who were on hand

Article 8 of the above rules was adopted by Group 4 only, this group consisting of Texas, Louisiana and Arkansas.

The pulpwood industry is to be complimented upon taking the initiative in establishing cutting procedure to maintain a permanent timber crop as well as a permanent pulpwood industry. These rules are by no means final and are established as a minimum requirement, and in the next few years the rules will be changed for improvement in accordance to the practices and results that will be obtained and checked throughout the area.

throughout the Exposition, explaining details of the exhibit and answering questions of those interested in opportunities for enterprise and capital in Louisiana.

The display was designed and constructed by the Clark Studios of Shreveport; a miniature reproduction in Masonite of waterways, terminals, barges and trucks emerging from the horn of plenty, with a back-drop of oil derricks and typical Louisiana scenery, live oaks, Spanish moss, etc.

Low power costs, adequate transportation facilities, abundance of raw materials and Louisiana's ten-year tax-exemption of new industries were stressed in the design, which was supplemented by a photomural of industrial scenes, prepared by Ledoux, Shreveport photographer.

The Louisiana exhibit occupied two booths on the second floor of the Exposition. It was moved to New York from Shreveport by the American Railway Express Company in a special car.

Success of the exhibit was made possible through the co-operation of the following: The Texas Company, Gulf Oil Corporation, Gaylord Container Corporation, Mackie & Sons (pine products), Wesson Oil Company, Godchaux Sugars, Inc., Myles Salt Co., Freeport Sulphur Co., Celotex Co.

New Bird Added To Louisiana List

A new species was added to the list of birds known to occur in the State of Louisiana when a specimen brought to the Bureau of Scientific Research and Statistics of the Department of Conservation was identified by James Nelson Gowanlock, Chief Biologist, as a Holboell Grebe, *Colymbus griseogen holboelli*. Nowhere, as far as is known, in either museums or in published records has this species hitherto been recorded to the State. The individual, a female in winter plumage, was shot by Gilbert Sanson of Parr, Louisiana, at Stock Landing, Catahoula Lake, Rapides Parish, December 2, 1937. It was turned over by Mr. Sanson to Lawrence Merovka, Federal Game Agent for Louisiana, who brought it to the Department of Conservation's Bureau of Research. The specimen, donated to the Department, was mounted by Winston Nolan of the Conservation staff, and has been added to the Department's fine collection of native birds in the Conservation Museum, 237 Royal Street, New Orleans.

The Holboell Grebe breeds from northeastern Siberia, northwestern Alaska and northern Canada, south to northern Washington, North Dakota and southwestern Minnesota. The species winters chiefly on the Atlantic and Pacific coasts from Maine to North Carolina and from the Pribilof Islands and southern British Columbia to southern California. It also occurs in winter from southern Wisconsin, southern Ontario, southern Colorado and the Ohio Valley, casually south of Georgia, Florida and Tennessee. In Asia it reaches Japan in its winter migration.

The Holboell Grebe belongs to a peculiar bird group, constituting the family Colymbidae. Highly specialized, the grebes are remarkably adapted for an aquatic life. They are notable for their small wings,



Holboell Grebe (right) newly added to the list of Louisiana birds. The Pied-billed Grebe (left) is a regular Louisiana resident.

very short and inconspicuous tails and dense water resistant plumage. They share with loons the peculiar ability of submerging without diving, although they also dive in an odd manner by partially springing out of the water and plunging downward. They often remain with only the bill above the water, giving rise to much folklore concerning their apparently mysterious ability to vanish. The young characteristically swim soon after hatching and often rest amusingly on the back of their mother. Two other species of grebes occur in Louisiana, the Horned Grebe, *Colymbus auritus*, which is a winter resident, and the Pied-billed Grebe, *Podilymbus podiceps podiceps*, locally known as the Sac à Plomb ("bag of lead"), which is a common year round resident of many parts of the State.

The new specimen of the Holboell Grebe is shown at the right in the above photograph, side by side with a Pied-billed Grebe for purposes of comparison. The Pied-bill is the smallest of the grebes, only twelve to fifteen inches in length, while the Holboell Grebe, reaching a length of eighteen to twenty inches, is the largest of all the eastern grebe species.

Grebes were once much persecuted for the sake of their dense and beautiful plumage which was used for manufacturing capes, cloaks and hats. They are now completely protected by law.

Grebes feed largely on fish which are chiefly various valueless kinds, the rest of their diet being mostly made up of numerous kinds of crustacea and insects.

Topographical Survey of Louisiana

By
COL. HARRY JACOBS
Chief State Engineer

Under a cooperative agreement entered into, in 1931, between the Board of State Engineers, representing the State of Louisiana, and the United States Geological Survey, representing the Interior Department of the Federal Government, a considerable portion of the State has already been thoroughly surveyed and mapped, in the modern way, as will be seen from the accompanying skeleton map of Louisiana upon which has been charted the progress made.

The area surveyed was subdivided into quadrangles, some of which cover 15 geodetic minutes, and others only 7½ minutes. The 7½ minute quadrangles (and, of course, their corresponding quadrangle sheets) are each designated by an individual name, as are also each of the 15 minute quadrangles; however, there are four sheets for each of the latter and these sheets are designated, respectively, N.E., N.W., S.E., and S.W. portions of said 15 minute quadrangles.

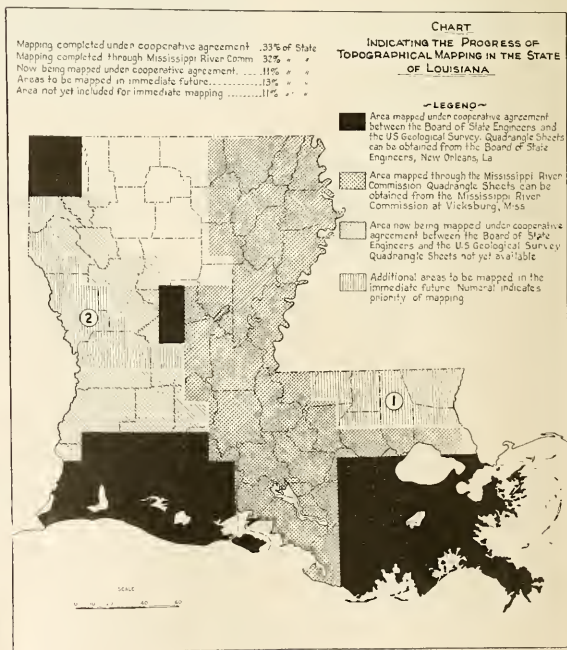
The cost of the surveys and the mapping done under this cooperative agreement, has been borne by the State and the United States on a 50-50 basis; however, there were areas like the National Forests, Wild Life Preserves, etc., the mapping of which was conducted entirely at the expense of the Federal Government. Furthermore, the Federal Government, through the Mississippi River Commission, has similarly mapped, and, in addition, contoured the valley area of the State, (amounting to nearly one third of the State's total area) that was concerned in the 1928 Adopted Plan of Flood Control—all at no cost to the State of Louisiana—and, there were a few scattered quadrangles elsewhere in the State that

had also been previously mapped without cost to the State. However, the latter are now comparatively obsolete and will probably be resurveyed and remapped.

So far the State has expended under the cooperative agreement, \$133,500.00, towards which the State Department of Conservation, in conformity with the provisions of Act 131 of 1934, contributed \$12,000.00, and the Board of State Engineers contributed the balance. The contributions of the Department of Conservation are expected in the future to amount annually to about \$12,000.00 to \$15,000.00.

The average cost to the State of the mapping has been about \$28.50 per square mile; and, this comparatively low cost figure is attributable to the fact that the aerial photographic mapping plan was employed, which entails only a comparatively small amount of ground control and a certain amount of investigation in the locality.

Under the cooperative agreement, the area to be surveyed each year depends upon the annual appropriations made available for the purpose by both the Federal Government and the State of Louisiana; and, the life of the agreement will extend over such period of time as may be neces-



"FIRST KNOW THYSELF . . ."

Editor's Note.—While most people have a vague notion that maps are important in the general scheme of things, and especially so when they are travelling about the terrain, hither and yon, they seem to be satisfied with a conglomerate collection of maps that are either obsolete or, if comparatively up-to-date, have no scientific basis of authenticity.

As Col. Jacobs tells us in this article, a topographic survey of Louisiana is now being made under a co-operative agreement between the Board of State Engineers and the U. S. Geological Survey. The average cost to the State of this mapping has been \$28.50 per square mile; and this comparatively low cost is attributed to the aerial photographic mapping plan which entails only a comparatively small amount of ground control and investigation in the local areas.

Writing on the subject of "No Maps In A Mapping Age", William Bowie, director of the U. S. Coast Geodetic Survey, says . . .

"We should realize that the present generation has inherited this country from its ancestors. As wise inheritors we should make an inventory of this wonderful patrimony. What has been handed down to us consists of three million square miles of land with soil of various degrees of fertility, an untold wealth of forests, rivers, streams and underground waters, and mineral resources of all kinds including oil, gas and coal. These are the essentials for maintaining human life and for providing means of producing and distributing needed goods."

What Mr. Bowie has to say about the entire country applies with particular emphasis to the State of Louisiana, which is endowed by Nature with such varied and extensive resources. It would seem that the old adage "first know thyself" would be applicable here as nowhere else; that we would no longer neglect the task of finding out what we have of assets and liabilities within the borders of our own state. A census of the population may disclose some trends of biological and sociological value—an accurate map of the topography will disclose unsuspected resources and opportunities for enterprise and capital.

sary to thus survey and map the entire State, with the option remaining to then further extend the agreement to provide for contouring all uncounted areas.

Copies of the available planimetric quadrangle sheets that were made under the cooperative agreement and that are plotted to a scale of 1:31,680 may be secured from the Board of State Engineers, Room 207 New Orleans Court Building, in New Orleans; and, copies of the contoured quadrangle sheets prepared under the direction of the Mississippi River Commission, and that are plotted to a scale of 1:62,500, may be secured from the District Engineer, Second New Orleans District, at the foot of Prytania Street, New Orleans.

Copies of an Index Map showing the location and the name of all the quadrangles in the State, and indicating thereon the quadrangle sheets now available, may be seen at the Board of State Engineers, the Department of Conservation, the State

Highway Department, the District Engineers of the First and Second New Orleans Districts, as well as at each of the Parish seats throughout the State.

The quadrangle sheets have been of inestimable value, to the Board of State Engineers in the preparation (for publication) of the New State Map (called for by Act 159 of 1928, and now practically ready to be forwarded to the Publishers), to the Department of Conservation in its Geological Survey and research, to the State Highway Commission, the Assessors throughout the State, the various oil and mineral companies operating in the State, and to many other public and private interests.

Inclusion of one Louisiana oyster of average size in the daily diet of anybody will provide about five times as much iodine as is ordinarily needed to prevent goiter, the food and drug bureau of the State Board of Health recently reported.

THE IDEAL STATE OF TOMORROW

(Continued from Page 5)

physical and moral stature as sportsmen in the best sense of the word.

Just as our people have been gradually educated to an appreciation of the value of education, with a corresponding increase in the enrollment of our schools and colleges, breaking down the barriers of illiteracy, it should be possible to instill in the coming generations a love of outdoor life, of hunting and fishing and recreation in the open field.

A Sound Investment

Certainly I would be the last one to suggest the regimentation of our youth and the encouragement of a military spirit, such as we have observed in some of the European countries, but the state has such a stake in the character-forming process of its future citizens that some form of subsidy and guidance might well be considered expedient and desirable. In the case of the submerged and under-privileged strata of society I should say that it would be money well spent for the state to invest a million dollars yearly, or more, in direct compensation to the parents, for the privilege of taking their boys into training camps at least one day a week, to inculcate in them a love of outdoor life, of the principles of conservation and the true spirit of sportsmanship.

Indeed, we might consider such a program so important that it would not be left to a voluntary sacrifice on the part of the parents, but through the inducement of a financial subsidy be made sufficiently attractive to insure its widespread acceptance.

We have witnessed the expenditure of stupendous sums in the name of relief, nor do we question their expediency as emergency measures; but we might contemplate the substitution of a program of character building in lieu of the laying of brick and stone—taking the lads at their most impressionistic age, when they are coming in contact with outside influences, oftentimes vicious—taking

them by the hand and giving them a start in the right direction. We already have the Boy Scouts and other established agencies in this field, but I have a feeling that it means so much to the future of our state and our country that it should receive the serious consideration of our statesmen and public-spirited citizens.

One of the outstanding achievements of the Federal government in the stress of the late depression was the establishment of CCC camps, and it should not be overlooked that there was a financial consideration involved in the support of the boys, that their families were direct beneficiaries of the system. My only criticism of this particular movement is that the boys should be taken in hand at an earlier age, when they may be subject to the temptation of certain degenerative practices current in our social order. It should always be borne in mind that the average boy is a young animal, full of animal spirits that demand some outlet for expression—if this outlet is not properly controlled it may turn in the wrong direction. Chances are the boy is not only getting his education in the schools but also from his companions and the cinema, and while I appreciate the fact that the talking picture is the greatest source of entertainment that the masses of our people have ever had we must remember that the realism of the camera has a tendency to exaggerate and idealize the pseudo-heroic qualities of underworld characters who are certainly not acceptable models for the impressionistic boy.

A Counterbalancing Influence

To counteract these pernicious influences of the day the state might well consecrate the inspirational thought of its leaders, to say nothing of a fair proportion of its income from material sources—that is, I should say that it would pay us to divert some of the income from our physical assets to the improvement of our morale and those spiritual desiderata which concern us all.

If there is any doubt in the minds of my readers as to the returns from such an investment in the health and

character of our future citizens I will try to paint a picture of our future state, as I see it.

I have been impressed by the idealistic concept of Normal Bel Geddes, the architect, who has given us a picture of the city of the future, its modernistic forms of construction and especially the protection afforded the pedestrian from the swiftly moving traffic. I am not an artist, but I would like to visualize in somewhat the same style our future state, as it appears to me. We cannot escape the fact that it will be highly industrialized; all of the factors that contribute to the upbuilding of industry are pointed in this direction. Industry has already turned southward from the North—the convergence here of raw materials for fabrication, cheaper fuel for power and water transportation to the centers of population, given momentum by favorable acts of legislation, will metamorphise Louisiana from an agricultural into an industrial empire.

Building Character

This being the case, with the numerical accretion of our industrial workers we may expect an infusion of those labor problems and difficulties that have racked and torn asunder other industrial communities. We may also be subject to the attack of alien agitators, seeking to introduce the poisonous virus that has led to the disaffection and downfall of other nations. But if we build wisely the character of our youth, if we bind them close to their own state through love of its great outdoors, they will have the stamina to resist these alien poisons; they will be satisfied with their own state, their own environment; outside influences will not lead them astray. They will furnish the labor for industry; and industry itself will be disposed to return to its workers a just proportion of the profit that will naturally accrue from increased efficiency and a minimum of labor turnover.

We have the plant with which to work, hundreds of thousands of acres, state-owned or state-controlled—the finest hunting and fishing preserves in America—wild life sanctuaries and

recreation parks that reflect the vision of our pioneer conservationists. But this great plant is of little value unless it is employed to promote the well-being and happiness of our people—just as precious jewels that are kept by a lady in her casket and only worn on special occasions.

I can see no way to utilize this plant except through a comprehensive system of education of our boys in the pursuit and appreciation of an active outdoors life, and for this program to be practical and really effective it will be necessary to have the co-operation of the parents. Some sort of subsidy or compensation to the parents may be necessary—this will doubtless depend on the economic status of the individual family. In any event this boy's time, and what he does with it, is worth more to the state than it is to anybody else—indeed it is the state's most precious possession. It may mean the salvation of the state in the years to come.

SUBSURFACE DISPOSAL OF OIL FIELD BRINES

(Continued from Page 14)

the Gulf Refining Company in the Lockport field; the joint operation of the Magnolia and Union Sulphur Company in the Big Lake field; the Superior Oil Company in the Bosco field; the Herton Oil Company in the Jeanerette field; the Texas Company in the Caillou Island and Lake Barre fields.

Fish Meal

When white fish meal is fed to cows, pigs, or chickens, no fishy taste is imparted to the milk, meat or eggs. The non-oily white fish flour, which is now prepared for human consumption, has a pleasant taste and odor, easily disguised, and of a good white color. It should find ready use in soups, chowders and croquettes, and its partial substitution for wheat flour in crackers should provide new types of bakery products of high protein value and great economy, besides supplying mineral constituents, especially iodine, to foods in many parts of the country, where there is a deficiency of this element.

State Park Planning For Recreation, Pleasure and Business*

By

JAMES P. GUILLOT

Treasurer, Louisiana State Parks Commission

"There is nothing more practical than the preservation of beauty; than the preservation of anything that appeals to the higher emotions of mankind." These words of Theodore Roosevelt may well serve as an introduction to this discussion of the meaning, the method and the value of State Parks in Louisiana.

What are State Parks? What do they mean to me as a citizen seeking with his family and friends a day of recreation? What do they mean to me in terms of better business? These are three natural questions which arise in the mind of anyone unfamiliar with the program and plans of the State Parks Commission of Louisiana. Their answer is the purpose of this article.

State Parks and their adjuncts are public areas provided with varying facilities and services and dedicated to public recreational use. They may range in character from small parks, which are simply small picnic grounds, to extensive parks provided with camping facilities and overnight cabins, or to parks which combine natural beauty with some special historical or monumental significance. Concrete examples of types will be presented.

It must first of all be clearly appreciated that State Parks and their adjuncts, besides a very practical value in pleasure, offer also a very practical value in business. Evi-

dence of this will be presented below.

Let us turn to a consideration of two specific State Parks of Louisiana before discussing the broader aspects, such as, the character of State Parks, the history of State Parks in general,

taken by the State Parks Commission. Located on trans-continental U. S. Highway No. 90, Fort Pike lies 31 miles from the heart of New Orleans, and is actually included within the city limits of New

Orleans. Constructed by the Federal Government under a contract entered into 119 years ago, Fort Pike formed an important part in a chain of defenses designed to protect the South's largest city. Completed in 1824 at a cost of \$635,000, the citadel, mounting forty-eight guns, was destined never to shed any blood with its armament, although the Fort played a part in the exciting events of the War Between the States. When the decision of Louisiana regarding the North and South trembled in the balance, State forces under Major Bosworth, captured Fort Pike, January 14, 1861. Fort Pike was bloodlessly recaptured by Union forces on April 27, 1862. The evidence indicates that if Fort Pike alone had been concerned in this vast contest of forces, it could have fought its own particular fight with every prospect of success. The fates decreed that this contest should never come to issue.



A winding driveway through "The Woods" in the Longfellow-Evangeline State Park, St. Martinville, Louisiana.

the history of the State Park program in Louisiana, and the future plans involved in this program.

Fort Pike State Park was the first State Park project officially under-

* The writer wishes to acknowledge the aid of the following in the preparation of this discussion: Graham Rushton, Inspector, National Park Service, Carroll L. Wood, Jr., Assistant State Supervisor, Recreational Study, National Park Service, James Nelson Gowanlock, Chief Biologist, Department of Conservation, Consulting Biologist, State Parks Commission.

Fort Pike an Aquatic State Park

Such is the background of Fort Pike. What of Fort Pike as a State Park?

Fort Pike is probably unique in its peculiar combination of accessibility and unusual recreational possibilities. Actually, as already stated, within the city limits of New Orleans, Fort Pike stands as a picturesque monument out of the past and offers to the present a pleasant recreational area set in the heart of wonderful sport fishing waters. Porpoise and tarpon play in the Rigolets past its walls. Redfish, croakers, drum and speckled trout abound, challenging the best skill of the sportsman. Opportunities, for which many a northerner and inlander would journey for a thousand miles, lie less than an hour away from the city office desk. Hundreds of citizens use its facilities every weekend, and this number is constantly increasing.

The State Department of Conservation created an extensive fishing preserve in Lake Borgne and adjacent bayous. Commercial fishing is prohibited in these excellent waters, thus guarding against the depletion of the supply of game fish.

Within a hundred miles of Fort Pike some 762,000 citizens of Louisiana live. During the period July 12

through July 31, 1937, an average per week of 737 in-state cars and 170 out-of-state cars was recorded.*

Fort Pike is thus one example of unusual State Park recreational opportunity afforded to a great metropolitan area. It is one example of the recreational opportunity for family or group picnics by which State Parks solve the problem of what to do with a holiday. The future of Fort Pike involves the development of the Louisiana Purchase State Park of which it will be one unit.

The plan as suggested by the National Park Service will form a parkway beginning from the Mississippi line at Pearlinton, Mississippi, and extending on along U. S. Highway No. 90, the Old Spanish Trail. This Louisiana Purchase State Park will thus include Fort Pike State Park, a State Park at Fort Macomb at Chef Menteur, and the Chalmette National Monument at New Orleans, commemorative of the Battle of New Orleans.

Longfellow's Story of Evangeline Lives Again in a State Park

Let us now turn to another concrete example of State Parks in Louisiana, the Longfellow-Evangeline State Park.

Although not the first park to be developed officially by the State Parks Commission, the Longfellow-Evangeline State Park is nevertheless the first State Park to be developed in Louisiana. Created by a local interested body, the park was originally placed under the jurisdiction of the Longfellow-Evangeline Park Commission created in 1930. In 1935, other legislation repealing the earlier act was passed transferring all the powers, duties and prerogatives of the Longfellow-Evangeline Park Commission to the State Parks Commission of Louisiana.

A Story of Exile and Devotion

The story of Evangeline has had world wide appeal in its tale of wandering, of exile and of devotion.

"Then Evangeline slept, but the boatmen rowed through the midnight,
Silent at times, then singing familiar Canadian boat-songs,
Such as they sang of old on their own Acadian rivers. . . .
Thus ere another noon they emerged from those shades; and before them
Lay, in the golden sun, the lakes of the Atchafalaya. . . .
Faint was the air with the odorous breath of magnolia blossoms."

The Longfellow-Evangeline State Park brings from the past to the liv-

*"Study of Attendance and Park Use, Fort Pike State Park, Rigolets, Louisiana," by Carroll L. Wood, Jr., Manuscript Report, December 16, 1937.



A picturesque foot-bridge gives access to an island in the Longfellow-Evangeline State Park.

ing present the drama of that poignant story. Situated on the border of the historic town of St. Martinville, the park lies in the heart of the Teche country, a region everywhere rich in glamorous history. Its present area, 157 acres, the park has as one of its borders the historic Bayou Teche itself. Near this site the exiled Acadians first landed after their long and harried journey from Grand Pre in the valley of the Gasperreau of Nova Scotia. The population is still predominantly French. Acadian buildings still stand everywhere, not as historical monuments, but as present habitations. The inhabitants are immediate descendants of the Acadians, surprisingly unchanged by the passage of time. St. Martinville has had few immigrants and new families in the last eighty years; its population has neither grown nor decreased during that time.

In the burial ground of the picturesque old church at St. Martinville stands the tomb of the woman whom tradition has established as the original Evangeline. There has been erected beside her grave a statue of Evangeline to commemorate her association with the poem.

The Acadians are proud of their origin and of their history. They are zealous in preserving the homes that recall their past. They have preserved their original friendliness and hospitality unchanged, making the tourist or other stranger so welcome that all are eager to return again.

The old and picturesque Acadian home reputed to have been built and occupied by Louis Arceneaux, portrayed as the character Gabriel in the poem "Evangeline", stands in the park, amid the ancient moss-hung oaks. Around it the rolling land slopes away to the banks of the Teche, once the avenue of transportation, the thoroughfare of this country in pioneer days. No longer are its waters needed for that practical purpose since the park itself fronts on a modern concrete highway.

This old Acadian home will become the historical center of Evangeline Park through the services of Miss Dorothy M. Hancock of New Orleans,



A rustic footbridge under moss-hung oaks in the Longfellow-Evangeline State Park.

who is not only a widely recognized artist but a museum specialist, whose services the Commission has been fortunate in securing. Her experience and skill will contribute greatly to the re-creation of the important historical picture of Acadian days in Evangeline Park.

Indeed, the park lies only 120 miles south of Alexandria which is the most central city in the State, and the park is only 120 miles by highway from Baton Rouge, the State Capital. Within a radius of 100 miles, there is a population of almost 600,000.* Longfellow-Evangeline State Park is clearly destined to become one of the great centers for the preservation of the history of Acadian culture. Here the Acadians, after the hardships of their wanderings, established for

themselves homes which, at first primitive, expanded with successive generations into a generous development of Acadian life and culture. Those days are recalled in this passage from Longfellow's measured verse:

"Over the joyous feast the sudden darkness descended,
All was silent without, and, illuming the landscape with silver,
Fair rose the dewy moon and the myriad stars; but within doors,
Brighter than these, shone the faces of friends in the glimmering lamp-light."

The Longfellow-Evangeline State Park did not need to be created. It already existed as a place of great historical interest and great natural beauty. It was merely necessary that

*"Study of Attendance and Park Use. Longfellow-Evangeline State Park, St. Martinville, Louisiana," by Carroll L. Wood, Jr., Manuscript Report, November 13, 1937.

it be established as a park and that essential developments be carried out in it.

The International Appeal of the Longfellow-Evangeline State Park

The appeal that the Longfellow-Evangeline State Park already holds is remarkable. The park is a veritable magnet to foreign and out-of-state visitors. A survey has shown that mid-April to mid-July of 1937 an average of 74 out-of-state cars and 266 in-state cars visited the park every week. During July the average of out-of-state cars rose from 74 to 193 a week. It is clear that when a historical museum now being created is in operation and when such recreations as swimming, soft ball and other outdoor games become available, a well balanced development of both historical and recreational characteristics will make the Longfellow-Evangeline State Park a place of preeminent appeal. State, civic and religious pageants will find in the park an appropriate background for their enactment. The beauty and tradition of the past will live again in the original setting of Longfellow's story. There will seem to live again the occasion of Evangeline's arrival as Longfellow has beautifully described it:

"Filled was Evangeline's heart with inexpressible sweetness.
Touched by the magic spell, the sacred fountain of feeling
Glowed with the light of love, as the skies and waters around her.
With such a prelude as this, and hearts that throbbed with emotion,
Slowly they entered the Teche, where it flows through the green Opelousas."

State Parks in Terms of Profitable Business to the State

It is desirable to emphasize that such State Park appeal means much in terms of business to the State. The competition between states for tourist attention is steadily keener. Tourist patronage has become a big business on this continent. It is a big business of a most peculiar sort, since it means addition of income to the citizens of the State with on the part of the individual a negligible investment or no investment at all. Increased revenues are enjoyed without the expenditure of increased capital. The attractive force of such a park as the Longfellow-Evangeline State Park for thousands of tourists will rapidly grow, for this place is, in sentiment and tradition, already an international shrine, matching in historic interest the international shrine at Grand Pre, the region from which the Acadians, their homes

cruelly destroyed, were expelled to begin their exiled wanderings.

State Parks, although they mean much in practical terms of increased state business, cannot be expected to be self-sustaining at the beginning. Only through development of the attractions and facilities will the State Park become a self-sustaining entity and a financial asset to the state. Before that, however, the State Park is already a state asset in its attractive value for visitors from without the state.

The Early History of the State Park Movement

State Parks are not new. As a matter of fact, Louisiana has been long delayed in the inauguration and development of a State Park program. State Parks date back to 1865* when Congress granted to California the Yosemite Valley and the Mariposa Grove of big trees for State Park purposes. In 1870, the general court of Massachusetts created a Board of Park Commissioners with power to locate in or near the City of Boston one or more public parks "for the recreation, health and benefit of the people." Virtually State Parks go even much farther back, for in 1641

*"State Aid to Vacationists," by Conrad L. Wirth, Assistant Director, National Park Service State Government, Volume 10, Number 8, August, 1937, Chicago



The Acadian House in the Longfellow-Evangeline State Park. This was the home of Gabriel Arceneaux who, according to local tradition, was the Gabriel of the poem.

the Massachusetts Bay Colony by ordinance decreed that great ponds, meaning bodies of water over ten acres in extent, shall be forever open to the public for fishing and waterfowl hunting. New York authorized its first State Park in 1883, appointing at that time commissioners of the state reservation at Niagara. Minnesota, in 1899, established Birch Coulee Park, a battleground of the Sioux War in 1862. Connecticut established the Israel Putnam Memorial Camp Ground in 1887. Pennsylvania provided, in 1893, for the perpetual preservation as a State Park of the place where General George Washington encamped at Valley Forge during the winter of 1777-1778. Michigan, in 1895, received Mackinac Island and Fort Michilimackinac from the Federal Government and established them as State Parks. Illinois created, in 1903, a State Park at Old Fort Massac to be kept forever "free of access to the public."

Previously to 1933, there existed in the United States 792 State Parks or related areas, with a total of 3,259,996 acres. When in the course of human events it became necessary to establish the Emergency Conservation Works program, conservation in general and parks in particular received an unprecedented impetus. Wisely it was decided that to relieve temporarily human needs works of permanent human value were to be constructed. State Parks were part of this program. Six hundred and thirty-nine Civilian Conservation Corps Camps were worked in 586 state, county and metropolitan parks since the beginning of this program. Most of these activities have been carried out in state-owned areas. The National Park Service during that period has cooperated with 47 states, 26 counties and 69 cities.

The Great Impetus Due to Federal Cooperation

The development of State Parks throughout the United States has received, as already indicated, a great impetus due to Federal cooperation. The annual appropriations by the various states themselves, as indicat-



The statue of Evangeline at the tomb of Emmeline Labiche, the traditional heroine of the poem. This stands in the grounds of the Church of St. Martin, St. Martinville. This beautiful memorial was the gift of Dolores del Rio to the people of St. Martinville.

ed by available figures, range widely, from \$750.00 for the State of North Dakota to \$150,000.00 for the State of California and \$5,575,880.84 for the State of New York.

It was inevitable that this emergency work suffered from emergency conditions. It was necessary to meet immediate relief conditions. Much of the work was of necessity done in a hasty and unplanned fashion.

The Department of Conservation of Louisiana did formulate a careful plan, but due to various influences existent at that time Federal cooperation was not available. The actual beginning of the work was delayed until, after two years of National Park activities, the Legislature of the State of Louisiana came

to realize the objectives of the national effort to provide recreational areas in all the states. Louisiana furthermore is virtually by nature an entire State Park, since recreational opportunities are inherent in every parish of the whole State. This fact alone also led to considerable delay.

The Formation of the Louisiana State Parks Commission

Let us now briefly review the Legislative development of the State Park movement in Louisiana. The Legislation which creates and establishes the State Parks Commission of Louisiana is Act 91 of the 1934 Regular Session.

The State Parks Commission is a highly logical and effective organiza-

tion. The Commissioner of Conservation, the Honorable William G. Rankin, is ex-officio member and Chairman of the State Parks Commission. The other ex-officio members are Harry Jacobs, Chief Engineer of the Board of State Engineers (Mr. Jacobs also serves as ex-officio Vice-Chairman of the State Parks Commission); L. P. Abernathy, Chairman of the Louisiana Highway Commission; Miss Lucille May Grace, Register of the State Land Office. The fifth member, Nicole E. Simoncaux, is appointed by the Governor and serves as Secretary of the State Parks Commission, and is the only member receiving remuneration. James P. Guillot, Secretary to the Department of Conservation, is the appointed Treasurer of the State Parks Commission, and serves in additional special executive capacities. All other Commission members, the Treasurer and all the consulting experts, donate their services gratuitously to this work. V. H. Sonderegger, State Forester, Cyril K. Moresi, State Geologist, T. Slack of the Louisiana Highway Commission, James J. A. Fortier, President of the State Museum Commission and Director of the Louisiana State Museum and James Nelson Gowanloch, Chief Biologist of the Department of Conservation, serve the State Parks

Commission as Consulting Forester, Consulting Geologist, Consulting Landscape Architect, Museum Consultant and Consulting Biologist, respectively.

The Commission has supervision and control over all State Parks and all personnel of the State Parks service. As already stated, only the Secretary receives compensation. The Commission's responsibility is the establishment, protection and management of State Parks and recreational centers in Louisiana.

Louisiana Program Present and Future

There are six properties at present in the possession of the State Parks Commission which are either partially developed or are to be developed in the near future. These are:

Longfellow-Evangeline State Park at St. Martinville, St. Martin Parish, on the banks of the Bayou Teche. It is 157 acres in extent.

Fort Pike State Park in Orleans Parish, on the Rigolets, 31 miles from the center of New Orleans. It is 125 acres in extent.

Avoyelles Indian Wayside Park in Avoyelles Parish, on the banks of Old River, one mile from the town of Marksville. It is 34 acres in extent.

Included in this area are three Indian mounds.

The Bogue Falaya State Park, a wayside park in the town of Covington, St. Tammany Parish, on the banks of the Bogue Falaya River. It is 13 acres in extent.

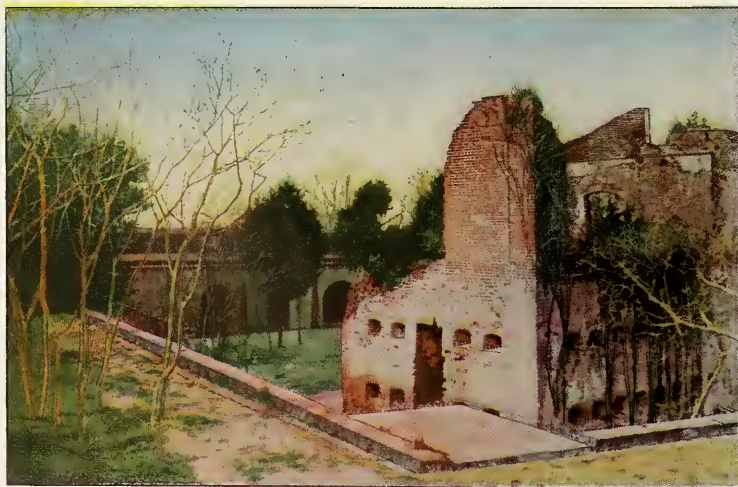
Chemin-a-haut State Park, in Morehouse Parish, on Bayou Bartholomew, about 12 miles above Bastrop. It is 500 acres in extent.

Marigny Estate, known as Fontainebleau, situated on Lake Pontchartrain just in the rear of the City of Mandeville, approximately 7000 acres, recently acquired, presents in the opinion of National Park authorities one of the finest State Park sites in the South.

Park development of Fort Macomb on Chef Menteur in Orleans Parish, 22 miles from the center of New Orleans, was begun by the Emergency Relief Administration, but this work stopped due to litigation regarding the title to the property. The tract has an area of 16 acres and it is proposed that it will become the second unit of the Louisiana Purchase State Park.

The following State Park sites have been inspected with the purpose of future park development of them:

Beechwood Fish Hatcheries, 15 miles south of Alexandria in Rapides Parish. The Hatcheries have an area



The ruins of the citadel of Fort Pike viewed from the ramparts, Fort Pike State Park.

The beautiful arches of the internal structure of Fort Pike are well shown in the accompanying photograph, Fort Pike State Park, Louisiana.



of 240 acres and recent acquisition of approximately 1500 acres with an adjoining State Forest 6000 acres in extent.

Iatt Lake site, about 6 miles north of Colfax in Grant Parish. It has an area of approximately 4,000 acres.

The Northwest Fish and Game Preserve, 18 miles west of Winnfield, 15 miles east of Campti, in Winn and Natchitoches Parishes. This would include a permanent sheet of water some 15,000 acres in area.

False River site, 6 miles from New Roads in Pointe Coupee Parish, with an area of 2725 acres.

Dolette Hills site in DeSoto Parish. This is a large area offering a choice of several possible sites presenting unusual physiographic features for Louisiana.

Lake Bistineau site, located in 3 Parishes, Webster, Bossier and Bienville. This has an area of approximately 18,000 acres of land and water surface when completed.

Chicot Lake site, 6 miles north of the town of Ville Platte in Evangeline Parish. An area of 4000 acres.

Chappeeela site on Chappeeela Creek, 12 miles east of Hammond in Tangipahoa Parish.

Expert Planning Necessary for State Parks

Planning is essential to State Park success. What is such planning? Briefly there may be indicated the many involved considerations which determine the choice of the development of a State Park as a recreational area.

Physiography is a determining factor. Hills, valleys, rivers, lakes, marshes, beaches, prairies, brooks, waterfalls, natural swimming places, ravines, rocky outcrops, fossil deposits, unusual rock formations, all may enter into this category. It is a question therefore not only of physiography but of geology also.

Climate may also play an important part. A study of temperature, humidity, precipitation and wind is necessary in determining the recreational possibilities of a park.

The selection of land for recreational use also involves economic factors. Land values, tax delinquencies, removal of land from taxation, mortgage indebtedness, productivity, cost of maintenance, revenue potentialities, all must be considered. Likewise transportation facilities, financial ability of the surrounding population and possible indirect effect on local trade and local land values enter into the picture.

Examination of the area from a biological point of view is also necessary. It must be known to what extent animal life and plant life contribute to the recreational and conservation resources of the area. These biological elements must, if necessary, be restored and must be maintained. Particularly is this true in Louisiana where controlled fishing constitutes in excellent sport such a valuable biological asset.

The historical and architectural aspects of a State Park may be of importance. The Longfellow-Evangeline State Park is an example of a traditionally historical area. Elsewhere in Louisiana certain of the park areas are associated with high archeological interest, since they include the burial sites and other monuments of pre-Columbian Indians.

State Park planning must also consider social data. The composition, customs and general characteristics of the population must be examined. The extent of present needs must be determined in terms of population density and population trends. Such calculations must look forward into the next twenty or thirty years. Racial heritage, cultural levels, occupational characteristics must all be examined with care.

Legal aspects also require attention. The legal status of land areas involved must be carefully examined.

Medical aspects must be included in the planning program. The healthfulness of water spots in a specified area, types of sewerage and refuse disposal required, the necessary preventive measures against disease, including, for example, a mosquito control program, must be investigated. The permissible relative density of housing must be determined.

Engineering factors enter greatly into State Park planning, the design and construction of bridges, the structural character of recreational buildings, the design of dams, levees, dikes, jetties, groins, power lines, sewerage and waste disposal systems, telephone lines, water supply systems, reservoirs, docks, piers and roads must all be surveyed and planned from an engineering point of view. Erosion control often plays an important part. Engineering personnel and consultants are essential.

State Park planning involves also landscape architecture. The general arrangements must be correlated with buildings, roads and other improvements to accomplish a satisfactorily esthetic result. The planting or the removal of trees, the design of parking areas, the development of public camp grounds, the obliteration or

shielding of unsightly park features, the course and arrangement of walks and paths, operations of seeding and sodding, selective cutting of trees and shrubs and the general management of soil preparation are part of any well planned State Parks program.

The services of trained biologists are also specifically required to co-operate with medical consultants in disease control, particularly in mosquito eradication. Biologists also must be called upon to determine the proper park management in relation to wildlife. Specified areas in State Parks can be set aside as natural wildlife refuges without in any degree whatever impairing the public use of the State Park. Since no hunting is permitted in State Parks such areas can become, for example, virtually natural quail hatcheries. The adjustment of human use of the park area in correct relation with the wildlife of that area requires expert biological advice.

Forestry plays an essential part in State Park planning. The conservation of timber and shrubs and particularly protection against forest fires, as well as the proper control and segregation of fires for camp or picnic use must all be decided with the advice of trained foresters.

The value of the State Park is greatly increased by proper consultation with historians and anthropologists. Everyone is deeply interested in the history of a recreational area and where this aspect is properly developed and presented the recreational value of the park is much enhanced. Historical remains, such as, Indian mounds, burial sites, and kitchen middens have great interest also, but must be scientifically examined and accurately brought to attention.

The design of buildings in accord with the architectural traditions of the park region requires the trained skill of architects familiar with local history.

The organization of the Louisiana State Parks Commission, as already indicated, is distinctly logical, since the Commission is composed of representatives of the Department of Conservation, the Board of State Engineers, the Louisiana Highway Commission and the State Land Office. All of these departments command interests, personnel and equipment that will serve to further State Park interests.

The appointed Treasurer of the Commission, James P. Guillot, also renders other executive services, and like the other members, with the exception of the Secretary of the Commission, receives no remuneration.



Through an archway of the Fort are seen the ruins of the old Fort Pike citadel, Fort Pike State Park.

The consultants donate to the Commission their highly trained services. These consultants include the State Forester, the State Geologist, the State Landscape Architect, the President of the State Museum Commission and Director of the Louisiana State Museum, and the Chief Biologist of the Department of Conservation.

All of these aspects make clearly evident the necessity for coordinated planning by trained men so that the merits of a State Park area can be discovered, developed and adequately presented.

Roadside Parks

One type of State Park development not yet realized in Louisiana deserves special mention. This is the roadside park as developed, for example, in the State of Texas. Landowners, usually farmers, donate to the state roadside areas which range from even less than an acre to several acres in extent. These roadside parks are fenced off and improved. Some are merely provided with outdoor ovens, barbecue pits, shelters and picnic benches; others are developed so that camping facilities are available. Scattered throughout the state, they afford highly appreciated recreational opportunities. The name of the donor cast in a metal tablet is placed on a monument in each of these parts. It is of particular interest to note that usually such donors have themselves greatly profited from these parks, since picnickers and campers purchase various supplies from the adjacent homes.

State Parks and Conservation Gatherings

One further use of State Parks should be specially emphasized. This is the carrying out of a program of community conservation gatherings. Indiana is probably preeminent in the development of this activity. Six hundred and forty-three conservation clubs have been organized in Indiana,* and among the high points of their

activities are picnics and barbecues in State Parks. Addresses by conservation officials and interested civic leaders accomplish much in conservation education. The records clearly establish the high appeal of this work, since at a single community conservation picnic several thousand citizens have gathered.

Though late to start this work, Louisiana in accord with the Federal program has established its cooperation and contribution by passing State legislation necessary for State Park activities. Not only has the problem of operative expenses been in some measure provided for, but the Legislature has also expressed its willingness to give some financial aid in acquiring suitable Louisiana State Park sites.

Organized State Parks Commission Ensures Federal Cooperation

Conrad L. Wirth, Assistant Director of the National Park Service, at the National Conference on State Parks held at Washington, D. C., in June, 1937, made this principle of state cooperation emphatically clear when he stated:

"Now, to be perfectly frank and lay our cards on the table. . . . We are greatly concerned, especially in certain locations, with the organization which the States have set up to maintain these improvements that have already been put in at a considerable expense. . . ."

"In the letter of the President to the Governors, and also there has been written into the bill, a statement which says that the States or participating agencies must put up definite proof these areas can be maintained, that there is a definite need for them, that those agencies which are cooperating with the program will assume that responsibility.

"Many States have formed State Park Associations under their State laws. My own State did that in the past session. Those laws create public interest, an official and a definite interest in your plan. The coordination of our National resources has

been speeded up beyond our imagination of four years ago, as I said in the beginning.

"We are now passing from the emergency phase of the planned program and are going into a long-time, long-term program of planning for the protection and conservation of our natural resources. In this changing basis we are reaching into now, I want to see our State Park people along with the National Park people prepared to take full advantage of this long-time plan that is now being inaugurated. . . ."

"Your State Government has a definite responsibility in the National development of the recreational areas of America; they are close to you and to your people and I hope we will all bear that in mind when developing programs in the next three or four years and lay stress upon plans for cooperating with municipalities and other agencies."

This preferential treatment of states which have set up effective State Park machinery was further strongly enunciated by Robert Fechner, Director of the Civilian Conservation Corps, who in the course of an address delivered three months ago made the definite statement that, in the future, states which employed the proper personnel and which had secured sufficient appropriations to assume their full share of responsibility in the development of State Parks established would be given preference in the allotment of CCC Camps.

Such is the program of the State Parks Commission of Louisiana, a program which has deep significance both in terms of individual recreational pleasure for local residents, in-state and out-of-state visitors and deep significance in terms of individual business and profit for Louisiana citizens through the attraction to the Louisiana State Parks of visitors from far and wide.

The program requires and well deserves fullest legislative support as well as the cooperative work of all who are interested in the progress of Louisiana.

*"Conservation and the State Fair," Outdoor Indiana, Volume 4, Number 9, October, 1937, Fort Wayne.

Some Aspects of Louisiana Wildlife*

By
JAMES NELSON GOWANLOCH

A discussion of some broad and also some specific aspects of Louisiana wildlife is probably of interest to all sportsmen. Frequently here as elsewhere it is rather difficult to see the forest for the trees, and it is quite worth while to stand back a moment occasionally and get a wide view of the whole scene.

Broadly sportsmen's interests chiefly lie in two directions, birds and fishes. Deer hunting certainly has a wide appeal but it is rather a specialized sport. Furthermore, the factors that influence other forms of wildlife have also their effect upon such wild mammals as the deer. My remarks for the present will therefore mainly concern birds and fish.

The picture of the lost world which our pioneer forefathers found in North America is an extremely difficult one to reconstruct. Endless forests, innumerable game, vast networks of utterly unpolluted streams challenged them as a wilderness out of which they had to carve their homes and gain their food. Hunting for sport had scarcely a place in that life. Hunting for the table was a daily task.

We must recall how flights of the now extinct Passenger Pigeon darkened the sky and in migration sometimes passed continuously from sunrise to sunset. We must recall how in those earlier days the trains on the mid-western prairies were often actually halted for as much as nine hours until vast herds of Buffalo (American Bison) crossed the track. Our own great Audubon gives somewhere an account of a hunt that he made with some French gunners on the 16th of March, 1821, at Lake St. John near New Orleans when one hunter near him killed in that one single day

sixty-three dozen American Golden Plover. Audubon estimated that the two hundred hunters participating in the hunt killed at least forty-eight thousand Plover. That world is gone and it will never return. We must not deceive ourselves with any foolish hopes about that farewell to a sportsman's almost unbelievable paradise.

Sport and National Defence

But fortunately as guaranteed by the Constitution of the United States it is the inalienable right of every American citizen to bear arms. And perhaps because there flows in our veins the blood of pioneer ancestors, hunting and fishing still give us among our keenest pleasures. How greatly this American habit of hunting has affected the course of the Nation can scarcely be estimated. You will recall how during the World War, the professional soldiers of Europe were astonished at the brilliant marksmanship of an American army composed so largely of men who had left professions, business or the farm to take up for the first time a military life. Much of that skillful marksmanship was undoubtedly due to the typical American interest in hunting and shooting.

The problem of maintaining the proper means for the expression of sporting instincts is extraordinarily complex. One hundred and twenty-eight million people have been injected into an America whose pre-Columbian meager population had done little to destroy the game or change the environment. Vast cities have replaced once undisturbed areas of virgin forest. Innumerable industries now thrive, scattered in every community, many of them altering the character of the streams and in other ways affecting directly or indirectly the welfare of wildlife. This is in-

evitable. We cannot conceive of a successful American without industries. The problem that remains to be solved is how we can have our cake and eat it, too, how we can maintain a highly organized progressive development and at the same time insure that all possible safeguards be provided for wildlife.

We too often forget how vastly more fortunate we are in our wildlife conservation problems in North America in contrast with wildlife conservation problems of the European continent. Divided into numerous countries whose inhabitants speak different languages and whose national interests are presently more directed to building the destructive armaments of war than they are to the preservation of European wildlife, Europe forms a very different picture. Particularly does the situation in Europe affect migratory birds since, despite the energetic work of ardent conservationists there, a complete, satisfactory and effective international treaty protecting by agreement such birds throughout their travels across these various countries remains yet to be accomplished.

International Protection of American Wildlife

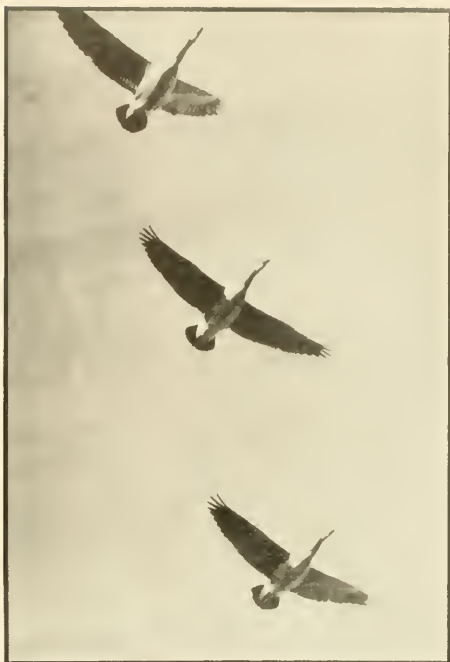
Here in North America, on the other hand, are two vast countries, the United States and Canada; countries speaking the same language; countries equally interested in preserving for posterity the heritage of game and other wildlife. The Government of the United States within the last year has also been successful, after long negotiations, in completing the treaty with Mexico that will contribute still more to the international preservation of these resources.

Louisiana ranks fortieth in point of size of all the forty-eight states, but

*Address before the Louisiana Sportsmen's League at New Orleans, December 13, 1937.



"From the portfolio "Flight" published by National Sportsman, Incorporated, 275 Newbury Street, Boston, Massachusetts. This portfolio of twelve remarkable pictures conveys the spirited character of waterfowl in flight.



PINTAIL*



CANADA GEESE*

Photographs copyright by Albert Dixon Simmons.

when it comes to wildlife Louisiana's place is at or near the top. This is the result of our climate and of our geography. Located at the base of the vast Mississippi Valley, Louisiana is a sort of Grand Central Station for the migratory bird life of two continents. More of the significance of that can be stated later.

Although our State has no mountains and very few real hills, thus lacking the abrupt variation in physiography that such a state as California presents, it is nevertheless true that other conditions more than compensate for this lack and we have in Louisiana wildlife of almost unparalleled richness. We have, the school books tell us, 4,794 miles of navigable waterways, but when we substitute for that term "navigable", the term "duck navigable" the whole State becomes a network of waterways available for waterfowl. Undoubtedly the most significant factor in the molding of our terrain has been the Mississippi River which has determined the richness and character of our soils and which has in large part affected the construction of an environment of land and water especially attractive to wildlife.

The Biology of Birds

I should like to speak briefly and broadly of birds. The birds are one of the most compact, most highly diversified and most interesting of all vertebrate groups. High-keyed physiologically, they live at a fast pace. Sensitive physiologically, they have responded to the influences of environment by amazing adaptations. Their conquest of the air has made many of them far wanderers. Their activities are intense. The body temperatures of many species are such that would be fatal to a human being if such temperatures existed in the human body for any considerable period of time. To run such a machine, fuel is necessary and the appetite and voracity of birds is remarkable. In many cases it is equivalent, for example, to the case of a man eating one hundred and twenty pounds of beef steak in a day. To burn that fuel to run the machine air is neces-

sary, and birds have evolved a peculiar respiratory arrangement unknown among other vertebrates. Instead of breathing the air simply into the lungs and then expelling it, birds pass the air into the lungs, then through the lungs into accessory air sacs distributed throughout the body, then from these accessory air sacs through the lungs a second time so that the necessary oxygen is much more efficiently administered to the blood stream. To conserve heat so necessary to their welfare, birds have evolved those peculiar structures, feathers, structures found nowhere else in the animal kingdom, yet structures exceptionally effective in insulation and at the same time so light that they are compatible with flight.

Some birds are very wide in their distribution. One of our Louisiana birds, for example, the Sanderling, can at one time or another of the year be found along practically every body of water in the entire world. Another of our Louisiana birds, the Barn Owl, a beneficial species, often called the Monkey-faced Owl, belongs to a group of owls that have penetrated to every continent of the world and have been so physiologically responsive to their surroundings that they have come to constitute no less than twenty-five species and subspecies.

Some birds, in contrast, are astonishingly limited in range. There exists, for example, a species of duck, a teal, that is known to occur only on a single lagoon less than one square mile in area located on a Pacific island.

Whole groups of our birds are characteristic of and are confined to the New World. Three such families, I might mention in passing, are the Wood Warblers, small, varied and unusually beautiful, the Hummingbirds, familiar to everyone, and the family Icteridae, which includes some of our commonest birds, such as our Meadowlarks, Orioles and Blackbirds.

When we turn to the birds that Uncle Sam still permits us to hunt we find here two sharp contrasts in habits. As you well know, we grow few indeed of our ducks in Louisiana,

and, in fact, we grow relatively few of our ducks anywhere in the United States. Our chief duck supply comes from north of our northern border, these birds sometimes traveling thousands of miles in their spring and autumn migrations.

The duck situation, as you all know, developed within the past couple of decades a decline so acute that it became a wildlife emergency of national importance. There have been many elements contributing to this. The earlier days with their particularly destructive spring hunting and their vicious though legalized market hunting did much of the damage. Then upon this reduced stock was inflicted destruction of breeding areas due to agricultural development and due to an exceptional series of droughts. The improvement of roads with the consequent expanded hunting radius for the individual, the availability of cheap guns, the development of cheap and harder hitting ammunition were important factors whose growing influence almost imperceptibly in progressively increasing effect has played its part in the depletion of waterfowl and other game.

The Blue Goose

Alone of all our waterfowl the Blue Goose has maintained apparently an almost even level of abundance. Nesting on the Arctic islands around the eastern entrance to Hudson Bay, the Blue Goose winters almost exclusively in Louisiana, journeying south and north in a unique migration. Southward bound, the birds fly practically non-stop from the barren Arctic islands to their wintering grounds along the Louisiana coast. Thus the Blue Goose escapes the barrage of the legal hunters in the vast intervening area. Its spring return is by easy stages, following retreating winter, but the abolition of legal spring shooting protects it at that time. Unaffected also by any agricultural development of its waste northern nesting grounds, the Blue Goose is thus normally subjected, as far as legal hunting is concerned, to the relatively reduced activities of

hunters on its winter areas. Furthermore, large refuges have been provided by State, private and Federal agencies in Louisiana. It thus seems (that barring some unforeseen epidemic or some unforeseen development of its northern summer home by man the Blue Goose will probably remain the one species of waterfowl least affected by the changes that have occurred in North America during the past three centuries.

The Fowler's Paradise at Catahoula Lake

There is also another interesting and perhaps unique waterfowl picture in Louisiana at Catahoula Lake in Rapides and Webster parishes. Here there exist concentrations of ducks the like which can probably be seen nowhere else in the entire continent. The ducks at Catahoula Lake resemble in their numbers the almost unbelievable flocks of geese to be found at the mouth of the Mississippi River. The basic reason for winter concentrations of ducks is abundance of available food. That basic reason makes Catahoula the duck resort it is. Some thirty-five miles long but so shallow that during the summer much of the lake dries out, permitting the driving of an automobile over the lake bed, Catahoula in winter becomes a vast ideal duck pond. This circumstance of shallowness and drying out is undoubtedly the determining factor that makes Catahoula the best duck lake in Louisiana if not the best duck lake in the United States. It happens, investigations have shown, that the chief source of food for the duck at Catahoula is one of the sedges known locally as the Chufa grass, *Cyperus esculentus*. Chufa grass will not grow if submerged the year around, but under the peculiar conditions existing at Catahoula it flourishes in such profusion that the ducks find a table set before them in the presence of their enemies and, in spite of those enemies, remain there to feast and face the assault of hunters.

During the hunting season just closed, one hunter at Catahoula shot
(Turn to Page 53)

A Solution for the Quail Problem

By G. B. CLAYCOMB
Professor, Southwestern
Louisiana Institute

It seems to be generally accepted as a fact that our Partridge, Quail or Bob-white have been greatly reduced in numbers in recent years. Where they were formerly common and even abundant they are now few and widely scattered. Everyone who has any interest in these fine birds has noted with regret this decline in Quail population. One farmer said to me not long ago, "I used to have nice flocks of Quail on my farm, but they are all gone now." A hunter remarked some time back, "It doesn't pay to keep a bird dog any more, the Quail have become so scarce."

The reasons for this decline become apparent when we inquire into the causes. The more extensive use of land for purposes of cultivation, the clearing up of natural cover and destruction of nesting places, a larger number of roaming dogs and cats, and the gradual increase and improper methods of hunting are the principal factors in Quail depletion. Most of these causes are very apparently subject to control and certainly all may be considered as remedial.

A great deal of our sloping land now under cultivation is rapidly washing away and should be returned to natural pasture or wooded condition. This would provide protection and nesting places for Quail and would save the land from the destructive action of erosion. Allowing the gulleys and ravines to grass over and grow up in briars and shrubs checks the washing and provides desirable quail cover.

Stray Dogs and Cats

Communities may well look to the reduction of the number of stray and roaming dogs and cats. These unfortunate and famished animals may shift for themselves and they eat anything they can find, including quail eggs and young and often even adult birds. The constant rabies menace

which these uncared—for carnivores present is ample justification for their elimination.

Undoubtedly the greatest single factor in Quail reduction is improper methods of hunting. Hunting destroys the strong as well as the weak birds and generally takes all, leaving nothing as a basis for the next year's crop. Unrestricted hunting has been the greatest evil. Every square foot of the terrain which has given promise of harboring Quail has been sought out by some zealous nimrod and deprived of whatever Quail it may have sheltered.

All the laws now on the statutes, even if they were enforced, will not save our Quail from extermination unless we supplement them with regulations in regard to the methods of hunting. These methods are very simple and easy of application and consist in the simple idea of not allowing hunting over the entire area. This may be easily accomplished by setting aside tracts upon which hunting is prohibited and upon which conditions are made favorable for the breeding and protection of the Quail. Such tracts are known as Protection Areas.

Protected Areas

Upon these Protection Areas Quail will multiply, and from them they will spread throughout the surrounding territory. Hunting will in this way be made better all around the Protection Area.

Your writer has maintained such an area in an experimental way for the past three years. Upon this tract food has been provided daily through the winter months to keep the Quail from straying away. It has been gratifying to see a few scattered remnants develop into several strong flocks. The birds have become tame and confiding. They are waiting for the feed almost every evening and they often come on the lawn and whistle from the tree near the house.

Broods of young have been hatched very close to the dwelling and the birds manifest a confidence which is pleasing to see.

These Protection Areas should be established here and there throughout the entire country-side. Such tracts have been maintained in a way by farmers who have posted their land. These farmers have been cursed and maligned by hunters in general, while as a matter of fact they have incidentally been about the best friends that hunting has ever had. Upon these posted lands the Quail have been able to maintain themselves and serve as a supply reservoir for the surrounding lands.

We need a considerable part of our land in Protection Areas. If half of our land were so protected, hunting would be twice as good on the remaining half. The Conservation Department and sportsmen's clubs should take an active part in creating Protection Areas. Any effort expended in such work will be amply repaid in greater Quail abundance.

Quail Hatcheries

Many states, including our own, are rearing Quail artificially. The minimum cost of production of Quail so reared is one dollar a bird and generally the cost greatly exceeds this amount. The rearing of hatchery raised Quail during the summer to be shot by hunters in the fall cannot be economically justified. The only legitimate reason for rearing Quail artificially is that they may become potential breeders when released. Now the logical places for the release of these hatchery reared Quail is upon the already established Protection Areas where they will find conditions suitable for their breeding activities.

It is perfectly possible through the return of our untillable land to pasture and wooded conditions, through the reduction of numbers of uncared for dogs and cats and through the extensive establishment of Protection Areas throughout the country to restore our Happy Bob-white to his former abundance, and bring his cheery whistle again to all our farms and plantations.

Geological Survey

DR. H. V. HOWE, Director
School of Geology of Louisiana State University
and Director, Research Division, Louisiana
Geological Survey

C. K. MORESI, State Geologist,
Louisiana Geological Survey,
Department of Conservation

Geological Bulletin No. 10, "Geology of Grant and La Salle Parishes," by Dr. H. N. Fisk, is now in press and should be ready for distribution in the Spring of 1938. These Parishes adjoin Catahoula and Concordia Parishes (Geological Bulletin No. 9) on the west. The main body of Geological Bulletin No. 10 is devoted to a discussion of the physiography, stratigraphy, and petroleum geology of the area. However, a brief outline of the archaeology, early settlement, and development of the parishes is included.

The region is divided into three main physiographic divisions. The first division, the alluvial valleys, includes the flood-plain of the Mississippi River, Red River, and Little River. Aggradation of the alluvial valleys is discussed in detail. Shifting of the Mississippi River channel during aggradation of its valley has lengthened or shortened tributary streams. Catahoula Lake, French Fork of Little River, and the inner, lower, natural levees of the Red River are largely explained by this process.

The second physiographic division, the Prairie Terrace, is named for a widespread surface typically developed on Catahoula Prairie, central La Salle Parish. This terrace flanks the present flood-plain over much of the region and is found to the south, where it is known as the Avoyelles Prairie (Hills), Holloway Prairie, and other low "prairies" of south central Louisiana. It forms the "second bottom" land and is probably the most widespread Quaternary terrace in the State.

The third division, the hills section, comprises a portion of the general area known as the Kisatchie Wold. This upland forms a line of hills which extends from the Sabine River, through Kisatchie in southwestern Natchitoches Parish, to the region of northwestern Catahoula Parish. Red River

and Little River cut across the wold and, flanking them in the interstream areas, are three terraces formed by Quaternary flood-plain deposits older than the Prairie Terrace. These terraces are named (youngest to oldest) Montgomery, Bentley, and Williana for localities, in Grant Parish, at which they are best preserved. The Catahoula upland, on Catahoula Miocene sediment, locally extends above the highest, Williana, terrace.

Lithologic Sequence

The terraces diverge northward so that in the northern parts of the parishes the complete lithologic sequence of these older flood-plain deposits may be studied. The terrace deposits and the Recent flood-plain materials, from both lithological and physiographic studies, are found to represent an alternation of valley cutting and valley filling, which was repeated at least five times. This alternation of events has been assigned to the Quaternary epoch. Valley cutting has been tentatively correlated with glacial stages and valley filling with the interglacial stages.

A considerable part of the report deals with the stratigraphy of the Tertiary sediments exposed in Grant and La Salle Parishes. Detailed stratigraphic sections of the Jackson Eocene, Vicksburg Oligocene, and the Catahoula Miocene sediments are shown. Check lists of the microfauna of the Jackson Eocene and Vicksburg Oligocene are included.

An attempt is made throughout the stratigraphic discussions to explain the sequence of Tertiary deposits by applying what is known of present day sedimentation along the Gulf Coast. The exposed Tertiary deposits are believed to represent a conformable sequence and are overlain unconformably by the Pleistocene terrace deposits.

Detailed subsea-level maps contoured on the base of the Catahoula, base of the Jackson, and on the base of the Cane River beds are included in the report. In addition, all known wildcat wells drilled in the area are tabulated and located. The maps and other information should be of value to anyone considering future exploitation of the petroleum resources of these parishes.

The Urania oil field is discussed. Its structure, stratigraphy, and production history are taken up at some length. A subsea-level contour map, interval 10 feet, is included. White Sulphur Springs oil field is briefly discussed and a subsurface map of the abandoned area is presented.

The report contains a geologic map of Grant Parish and one of La Salle Parish on a scale of 1:62,500. In addition, it has over fifty full page figures, plates, or folded inserts. It includes a list of lower Jackson Mollusca prepared by Wade Hadley, and a bibliography for the general region prepared by Mrs. Emma A. Fisk.

A Quart or Two of—Mud!

The Bureau of Scientific Research and Statistics of the Department of Conservation receives very numerous inquiries covering a wide variety of scientific and practical problems. Occasionally some query or request decidedly unusual turns up. The following self-explanatory letter belongs in this category:

"Calais, Maine,
December 27, 1937

"Dear Sir:

"Enclosed you will find 10c in stamps, for which will you please send me a quart or two of Mississippi mud as I have a turtle that came from the Mississippi. I wrote to you as I knew no one else. Please give this your immediate attention.

Yours truly,

(Signed) Philip Haley

Letters From Readers Of Louisiana Conservation Review

EDITOR'S NOTE.—In our last issue we carried a notice that our mailing list was being revised; that we should be advised of any changes in address. Evidently this notice inspired most of the testimonials which follow. Nevertheless, we appreciate these voluntary expressions of interest in the Review and the work of this Department.

Not only I, but members of my family have read with much interest the Conservation Review for a long period of time. The recent issue is a particularly outstanding one, and I spent a good part of Thanksgiving day going through it carefully.

Bryan Bell
1675 Soniat St.,
New Orleans, La.

This booklet is highly instructive and is a credit to the State and to your Department, and it is too bad that more of the citizens of Louisiana do not read it. They would know more about their State.

C. G. Rives, Jr.,
50 Audubon Blvd.,
New Orleans, La.

Think it's most intelligent and instructive magazine in South.

T. J. Walsh,
Pickwick Club,
New Orleans, La.

It is the finest magazine of its kind that I have ever had the pleasure of reading and it gets better every issue. I read every issue thoroughly and then pass it around among my friends who also enjoy it immensely. You are rendering a valuable and much needed service with this publication and one, that I know, is appreciated throughout the state.

O. A. Chandler,
219 Sterling St.,
Lafayette, La.

This is a splendid magazine—one of the best of its kind that comes to our attention. You are to be complimented on the excellent articles and illustrations that have characterized your publication.

F. C. Craighead,
In Charge Forest Insect Investigation,
U. S. Department of Agriculture,
Washington, D. C.

We think you have a splendid publication and enjoy receiving it very much. We appreciate you sending it to us.

F. F. Millsaps,
1900 Riverfront,
Monroe, La.

It is one of the few magazines that I do take time to read from cover to cover and find it very interesting.

Ralph D. McGee,
Eunice, La.

The interest created by the Review has already had a great deal to do in including Louisiana in my itinerary on two recent trips, and, incidentally, leaving quite a few dollars in your state.

Hastings P. Avery,
Securities and Exchange Commission,
Washington, D. C.

I have greatly enjoyed reading the Review. I had no idea until I read it of the wonderful resources and potential wealth of the state. I think that the publication and dissemination of the Review, with your pleas for conservation of resources, will insure the state a continuance of the prosperity it now enjoys. I congratulate you and your corps of editors on the fine way in which you are urging conservation.

D. L. Lewis,
State Supervisor of Rural
Schools of South Carolina.

We have found the magazine indispensable in teaching Louisiana Geography, History, Nature Study and other subjects. The Autumn 1937 number is the best of all the excellent numbers of this great publication.

T. A. Green,
Geography Instructor,
Louisiana Tech.

I am very anxious to receive further numbers of "Louisiana Conservation Review" which I value highly as a source of information about the natural resources of Louisiana.

H. A. Gleason, Acting Director,
New York Botanical Garden,
Bronx Park, New York, N. Y.

The Autumn 1937 number of your Review just came into my hands. May I say that I am more favorably impressed with it each time I see a new issue.

A. J. Sharp,
Dept. of Botany,
University of Tennessee.

May I at this time express my appreciation of your publication? It is one of the best periodicals published and is always filled with interesting articles.

King Rand, M.D.,
630 Washington Ave.,
Alexandria, La.

I read it over and over regularly and appreciate it more than I can tell.

J. W. Shell,
Pittsburgh, Pa.

I appreciate the Review a great deal, and consider it a valuable contribution to the cause of conservation in general. . . . Especially did I appreciate in the last issue the unemotional, level-headed editorial attitude towards the pollution problem.

Albert Collier,
Marine Biologist,
Rockport, Texas.

Recent issues of your publication present a very creditable format, and the articles continue to be of great interest.

Jack H. McLellan,
San Antonio, Texas.

(Turn to Next Page)

I consider it one of the best magazines that I receive. I think there are about four people who borrow my copy as soon as I read it.

T. A. Carter,
Alexandria, La.

Has aided me materially in my teaching work in this department.

E. L. Miller,
Dept. of Zoology & Entomology,
Louisiana State University.

My husband and I have enjoyed and appreciated every copy.

Mrs. R. C. Dalton,
West Palm Beach, Fla.

I read every issue carefully and am filled with admiration for the really splendid job you are doing with the magazine.

W. L. Scofield,
State Fisheries Laboratory,
Terminal Island, Calif.

I consider it one of the most valuable contributions to my library.

Howard J. Wiedemann,
New Orleans, La.

I wish to acknowledge the receipt of many copies of your very fine conservation magazine, which I think is a splendid publication. As I finish each copy I place it in the University Library. I wish we had something equally good here in Oregon.

Warren D. Smith,
Dept. of Geology,
University of Oregon.

This magazine surely is a masterpiece and I am certainly very glad to receive it.

D. F. Tegmeier,
Mt. Prospect, Ill.

Permit me to say that you are doing a very fine job of editing and I wish to congratulate you.

M. M. Wilkerson, Director,
Louisiana State University Press,
Baton Rouge, La.

I do wish to congratulate your department upon its very splendid work, not alone in the matter of conservation work, but likewise upon your excellent publication.

Charles E. Schwing,
Plaquemine, La.

We have found this publication most enlightening and educational and are very grateful to you for your courtesy in mailing it to us.

Williams Bauer Corp.
New York City.

I have just received the Autumn edition of your Review which I found to be both interesting and instructive.

Charles F. Claiborne,
New Orleans, La.

I enjoy reading the Louisiana Conservation Review and would like to be put on the mailing list.

Mrs. Frank Stubbs,
Monroe, La.

Please accept my congratulations upon the Louisiana Conservation Review. I consider its general appearance and the material between its covers of the highest type and a worthy addition to my library of Louisiana literature.

Arthur W. Van Pelt,
New Orleans, La.

Our whole family enjoys it so much—we think it is a grand magazine—it gets better and better all the time—we would surely miss it if it stopped coming.

Mrs. Kenneth Crosby,
Lake Charles, La.

Your department is indeed to be congratulated upon your very excellent publication, as well as the fine work in the interest of preservation of wild life and natural resources.

Lewis H. Donner,
New Orleans, La.

I have just received the Autumn 1937 issue and certainly wish to compliment you not only on the way it has been printed but on the contents thereof.

Harold Meise,
New Orleans, La.

The last issue was without a doubt the most interesting and best compiled issue to date. Its editors are to be complimented highly in this wonderful work.

Oliver Ford, Jr.,
Shreveport, La.

It is so full of facts about our great State and its natural resources—facts that would not be known if it were not for your fine publication.

J. D. Patterson,
New Orleans, La.

I desire to congratulate you upon this interesting publication, as the publication but reflects the efficient management.

J. T. Frawell,
New Orleans, La.

Congratulate you on your splendid publication.

F. H. Ford,
Shreveport, La.

I find yours one of the most interesting publications that comes to my desk.

W. F. Melton,
Atlanta, Ga.

Wildlife Conference

Dramatic presentations will be made of the latest research developments and important problems in the field of wildlife restoration at the Third Annual North American Wildlife Conference, to be held in Baltimore February 14, 15, 16 and 17.

Controversial subjects will be treated at the general sessions. Each

perplexing problem will be subjected to a panel discussion, with four authorities arguing the pros and cons. The authorities are now being selected by the American Wildlife Institute, the sponsoring organization for the Conference.

Each of the four authorities will be allowed ten minutes to air his views and an opportunity will be granted for rebuttal. The remainder of the hour's time will be allowed each subject under discussion at the general sessions will be devoted to open comment from the floor.

Eighteen Problems

Eighteen subjects of wide interest will be subjected to the panel discussions at the general sessions. Among the subjects to be so treated are pollution, drainage and reclamation, mosquito control, waterfowl and fisheries problems.

Sixty papers are now being chosen from among the hundreds submitted for presentation at the technical sessions. The selections are being made by a committee appointed by the Wildlife Society, which at the request of the American Wildlife Institute, is arranging the technical program. This committee is composed of Ernest Holt, Chief of the Division of Wildlife Management, Soil Conservation Service, chairman of the Committee; W. L. McAtee, Special Technical Advisor of the Bureau of Biological Survey, and V. H. Cahalane, in Charge of Wildlife, Natural Park Service. The Conference program committee is headed by C. M. Palmer, Jr., Assistant Secretary of the American Wildlife Institute.

There will be two technical sessions running simultaneously each day of the Conference except February 17, which will be given over to the national convention of the General Wildlife Federation. Five papers will be presented each day at each of the concurrent technical sessions.

During the day dedicated to the national convention of the General Wildlife Federation, attention will be focused on plans for North American Wildlife Restoration Week, beginning March 20.

Oil and Gas Wells Completed in North Louisiana During 3rd Quarter of 1937

Field	Name of Company	Name of Well	Date Completed	Initial Daily Production	Size Cbcke (Inch)	Grav-ity	Total Depth (Feet)
MONROE (Continued)	H. L. Woods (Gas)	Frost Lbr. Ind. #B-3	7/26/37	1½ MCF	.....	.....	2,203
	United Gas Pub. Service Co. (Gas)	Crossett #53	8/14/37	2 MCF	.....	.....	2,196
	United Gas Pub. Service Co. (Gas)	Crossett #55	8/1/37	1½ MCF	.....	.....	2,234
	United Gas Pub. Service Co. (Gas)	Crossett #56	8/24/37	1 MCF	.....	.....	2,250
	United Gas Pub. Service Co. (Gas)	Crossett #57	8/31/37	3 MCF	.....	.....	2,190
	Carbons Consolidated, Inc. (Gas)	Fee #12	8/26/37	2½ MCF	.....	.....	2,279
	Hope Producing Co. (Gas)	Cole #8	8/12/37	1½ MCF	.....	.....	2,170
	J. & H. Oil Co. (Gas)	Frost Lbr. #A-6	8/21/37	1½ MCF	.....	.....	2,182
	J. & H. Oil Co. (Gas)	Frost Lbr. #A-7	8/10/37	2 MCF	.....	.....	2,170
	Interstate Nat. Gas Co. (Gas)	W. A. Edwards #1	8/17/37	1 MCF	.....	.....	2,174
	Interstate Nat. Gas Co. (Gas)	Fee #70	8/19/37	10 MCF	.....	.....	2,184
	Interstate Nat. Gas Co. (Gas)	Fee Min. #72	8/3/37	10 MCF	.....	.....	2,159
	J. & H. Oil Co. (Gas)	Union Power #2-C	8/21/37	1½ MCF	.....	.....	2,200
	Southern Carbon Co. (Gas)	Grayling #19	8/2/37	9 MCF	.....	.....	2,116
	Southern Carbon Co. (Gas)	Grayling #21	8/17/37	11 MCF	.....	.....	2,131
	United Gas Pub. Service Co. (Gas)	M. D. Wheeler #1	8/28/37	2 MCF	.....	.....	2,269
	H. L. Woods (Gas)	Frost Lbr. Ind. #B-2	8/1/37	½ MCF	.....	.....	2,197
	Southern Carbon Co. (Gas)	Tensas Delta #18	9/24/37	5 MCF	.....	.....	2,161
	Carbons Consolidated Co. (Gas)	Fee #13	9/11/37	1 MCF	.....	.....	2,196
	J. & H. Oil Co. (Gas)	Frost Lbr. #A-4	9/11/37	2 MCF	.....	.....	2,255
	J. & H. Oil Co. (Gas)	Frost Lbr. #A-5	9/2/37	2 MCF	.....	.....	2,187
	J. & H. Oil Co. (Gas)	Frost Lbr. #A-8	9/22/37	1½ MCF	.....	.....	2,187
	Interstate Nat. Gas Co. (Gas)	Fee #73	9/17/37	4½ MCF	.....	.....	2,180
	Interstate Nat. Gas Co. (Gas)	Fee #74	9/28/37	10 MCF	.....	.....	2,150
	Interstate Nat. Gas Co. (Gas)	Fee #75	9/23/37	25½ MCF	.....	.....	2,234
	J. & H. Oil Co. (Gas)	Frost #B-4	9/14/37	½ MCF	.....	.....	2,235
	Southern Carbon Co. (Gas)	Grayling #17	9/10/37	9½ MCF	.....	.....	2,152
	Southern Carbon Co. (Gas)	Grayling #20	9/7/37	16½ MCF	.....	.....	2,118
PINE ISLAND (Caddo Ph.)	Stanolind Oil & Gas Co.	Rose Youree Lloyd #1	7/10/37	72 Bbls.	.....	Heads	39.4
	Stanolind Oil & Gas Co.	Rose Youree Lloyd #2	7/30/37	22 Bbls.	.....	.....	42.5
	Magnolia Pet. Co.	S. J. Robertshaw #24	8/6/37	32 Bbls.	.....	.....	28.2
	Stanolind Oil & Gas Co.	Dillion #124	8/18/37	64 Bbls.	.....	Pump	35.5
	Stanolind Oil & Gas Co.	Dillion Heirs #125	8/30/37	29 Bbls.	.....	Pump	31.8
	Magnolia Pet. Co.	S. J. Robertshaw #25	9/3/37	114 Bbls.	.....	.....	36.2
	Magnolia Pet. Co.	S. J. Robertshaw #26	9/30/37	373 Bbls.	.....	.....	39.1
	Stanolind Oil & Gas Co.	Dillion Heirs #126	9/11/37	15 Bbls.	.....	Pump	31.4
CADDO (Caddo Ph.)	Stanolind Oil & Gas Co.	Dillion Heirs #127	9/24/37	18 Bbls.	.....	Pump	32.5
	Surf Oil Co.	Sattellate #1	8/25/37	50 Bbls.	.....	.....	2,190
RAMSEY (De Soto Ph.)	Pullman Oil Corp.	J. W. Ramsey #1-A	7/3/37	48 Bbls.	.....	.....	37.9
RODESSA (Caddo Ph.)	W. C. Feazel	M. L. Pitts #1	7/23/37	219 Bbls.	.....	1/4	46.0
	J. E. Jones	La. Real Est. Dev. #1	7/21/37	40 Bbls.	.....	Heads	5,030
	W. N. Norton	W. N. Starcke #6	7/21/37	456 Bbls.	.....	3/8	44.0
	R. W. Norton	W. N. Starcke #11	7/24/37	389 Bbls.	.....	1/4	44.0
	Standard Oil Co.	Sarah Kaempfer #4	7/16/37	546 Bbls.	.....	25/64	43.5
	Standard Oil Co.	Emma J. Parker #B-1	7/21/37	691 Bbls.	.....	10/64	43.5
	Standard Oil Co.	O. A. Zylks #2	7/22/37	888 Bbls.	.....	1/2	5,950
	Surf Oil Co.	Alfred Sheets #1	7/1/37	364 Bbls.	.....	24/64	6,032
	United Gas Pub. Serv. Co.	Mattie L. Pitts Unit #11	7/7/37	144 Bbls.	.....	11/64	6,038
	United Gas Pub. Serv. Co.	Starcke #4	7/26/37	384 Bbls.	.....	24/64	5,970
	Clark Oil Corp.	Sharp #A-2	8/5/37	131 Bbls.	.....	25/64	44.5
	Magnolia Pet. Co.	D. F. Barr #1	8/19/37	234 Bbls.	.....	1/4	43.5
	R. W. Norton	W. N. Starcke #13	8/10/37	384 Bbls.	.....	3/8	41.0
	Standard Oil Co.	J. E. McCoy #1	8/23/37	402 Bbls.	.....	15/64	43.4
	Standard Oil Co.	J. E. McCoy #2	8/23/37	364 Bbls.	.....	12/64	43.6
	Standard Oil Co.	S. G. Zylks #2	8/25/37	384 Bbls.	.....	25/64	5,950
	United Gas Pub. Serv. Co.	Fee #574-8	8/2/37	226 Bbls.	.....	3/8	5,960
	Holcomb & Thomason	A. R. Dillion #1	8/22/37	1,632 Bbls.	.....	.....	43.0
	R. W. Norton	Jno. E. Payne #1	8/19/37	19 MCF	.....	.....	5,980
	Standard Oil Co. & Gulf Refg. Co.	J. W. Farmer #2	8/3/37	10 MCF	.....	.....	6,059
	Roberts Bros. Drilling Co.	C. F. Finley #1	8/30/37	97 Bbls. & 5 MCF	.....	26/64	60.
	Holcomb & Thomason	A. R. Dillion #1	8/19/37	82 Bbls.	.....	1/8	43.0
	Holcomb & Thomason	Smith & Zylks #1	9/13/37	157 Bbls.	.....	3/16	44.6
	R. W. Norton	W. N. Starcke #8	9/24/37	259 Bbls.	.....	1/8	43.7
	R. W. Norton	W. N. Starcke #9	9/20/37	360 Bbls.	.....	1/4	42.6
	R. W. Norton	W. N. Starcke #12	9/17/37	236 Bbls.	.....	1/4	41.0
	R. W. Norton	W. N. Starcke #14	9/8/37	331 Bbls.	.....	1/4	42.5
	Standard Oil Co.	Parker #C-1	9/30/37	384 Bbls.	.....	1/2	6,012
	United Gas Pub. Serv. Co.	Starcke #5	9/17/37	210 Bbls.	.....	12/64	43.2
SLIGO (Bossier Ph.)	Arkansas La. Gas Co.	W. H. Werner #B-2	7/1/37	26½ MCF	.....	.....	5,056
	United Gas Pub. Serv. Co.	Schnitt #3	7/14/37	20 MCF	.....	.....	62.0
	Arkansas La. Gas Co.	Tom Wilson, Sr. #2	8/22/37	29½ MCF	.....	.....	5,120
	United Gas Pub. Serv. Co.	A. J. Murff #A-2	8/25/37	18 MCF	.....	.....	68.0
SUGAR CREEK (Claiborne Ph.)	United Gas Pub. Serv. Co.	A. J. Murff #B-1	8/25/37	40 MCF	.....	1/2	67.0
	United Gas Pub. Serv. Co.	Brownfield #2	8/29/37	4½ MCF	.....	1/4	38.0
MONTCLAM (Lincoln)	United Gas Pub. Serv. Co.	J. W. Stevenson #1	9/25/37	65 MCF	.....	.....	5,670
	Lide & Greer—American Liberty Co.	M. E. Causey #1	8/10/37	35 MCF	.....	.....	5,820

Oil and Gas Wells Completed in South Louisiana During 3rd Quarter of 1937

Field	Name of Company	Name of Well	Date Completed	Initial Daily Production	Size Cchoke (Inch)	Grav-ity	Total Depth (Feet)
BAYOU CHOCTAW (Iberville Ph.)	Standard Oil Co.	Gay Union Corp. #7	9/22/37	1,680 Bbls.	1/2	.....	4,708
BAYOU DES ALLEMANDS (St. Charles Ph.)	Amerada Petroleum Corp.	State Lease #348-1	8/1/37	569 Bbls.	1/4	36.2	6,865
BAY ST. ELAINE (Terrebonne Ph.)	The Texas Co. F. J. LeBlanc	State #14 C. Wurzlow #1	7/30/37 8/12/37	1,004 Bbls. 200 Bbls.	3/8	29.5 28.0	5,624 1,031
BIG LAKE (Cameron Ph.)	Union Sulphur Co.	Henry Hebert #1	9/4/37	162 Bbls.	20/64	43.0	9,212
BLACK BAYOU (Cameron Ph.)	Shell Petroleum Corp.	J. B. Watkins #38	9/23/37	661 Bbls.	1/4	25.4	5,140
CAILLOU ISLAND (Terrebonne Ph.)	The Texas Co. The Texas Co.	State #51 State #44	8/13/37 9/8/37	793 Bbls. 887 Bbls.	3/8 3/8	 24.9	3,694 3,735
CHARENTON (St. Mary)	Pan American Prod. Co. Pan American Prod. Co.	South Coast Corp. #1 Veeder, Hunt #1	7/17/37 9/6/37	594 Bbls. 225 Bbls.	1/4 5/8	32.7 29.4	4,983 4,007
DOG LAKE (Terrebonne Ph.)	The Texas Co.	LLE Dog Lake #5	7/18/37	1,450 Bbls.	3/8	38.0	6,904
EAST HACKBERRY (Cameron Ph.)	The Texas Co.	State #22	7/19/37	666 Bbls.	1/4	35.8	7,678
ENGLISH BAYOU (Calcasieu Ph.)	Fobs Oil Co. Union Sulphur Co.	Castle #19 Castle #8	8/4/37 9/6/37	665 Bbls. 120 Bbls.	1/4 1/8	44.0 30.5	7,048 5,164
GARDEN ISLAND BAY (Plaquemines Ph.)	The Texas Co.	Garden Island Bay #22	8/29/37	1,467 Bbls.	3/8	31.9	5,061
GIBSON (Terrebonne Ph.)	Shell Petroleum Corp.	Realty Operators #B-2	7/31/37	997 Bbls.	1/4	39.5	9,513
GILLIS (Calcasieu Ph.)	Union Sulphur Co.	Barbe #15	7/1/37	239 Bbls.	16/64	37.9	6,724
GUEYDAN (Vermilion Ph.)	Pure Oil Co.	Mulvey Irrig. Co. #6	7/31/37	51 Bbls.	.....	28.0	4,196
HARANG (Lafourche Ph.)	Pan American Prod. Co. Pan American Prod. Co. Pan American Prod. Co.	Harang #7 Harang #9 Harang #8	8/10/37 8/29/37 9/6/37	515 Bbls. 193 Bbls. 643 Bbls.	1/4 1/4 1/4	34.8 32.0 32.6	7,148 6,960 5,420
HORSESHOE BAYOU (St. Mary Ph.)	The Texas Co.	State #1	8/12/37	1,050 Bbls.	1/4	39.7	10,975
IBERIA (Iberia Ph.)	The Texas Co. The Texas Co.	J. P. Duhe #3 H. C. Hansen #B-6	8/24/37 8/3/37	257 Bbls. 578 Bbls.	5/16 1/4	21.0 26.7	5,064 4,735
IOWA (Calcasieu- Jeff. Davis)	Shell Petroleum Corp. Shell Petroleum Corp. Shell Petroleum Corp.	F. Heyd #26 F. Heyd #27 F. Heyd #28	7/17/37 8/4/37 9/7/37	585 Bbls. 530 Bbls. 544 Bbls.	1/4 1/4 1/4	27.5 27.5 27.2	4,464 4,442 5,075
JEANERETTE (St. Mary Ph.)	Herton Oil Co.	W. C. Carter #8	7/26/37	898 Bbls.	1/4	40.5	7,048
JENNINGS (Acadia Ph.)	Burton, Noble, Baker Superior Oil Co. Superior Oil Co. Superior Oil Co. La. Crusaders Pet. Co. Glassell & Glassell Superior Oil Company Jolly Petroleum Corp. Burton-Noble-Baker Glassell & Glassell Jolly Petroleum Co. R. W. O'Meara Superior Oil Co. Superior Oil Co. Austin B. Taylor	Rohira #2 Iowa-Jennings #2 Wm. Leckelt #4 A. P. Moresi #1 Heywood-Martin #1-C Trushel #3 Wm. Leckelt #6 Wm. McFarlain #1 Rohira #3 Menou et al. #1 Crusell-McFarlain #1 L. McFarlain #1 Wm. Leckelt #5 A. P. Moresi #2 Lake Oil Co. Fee #1	7/24/37 7/15/37 7/8/37 7/18/37 8/13/37 8/17/37 8/23/37 8/29/37 9/5/37 9/15/37 9/19/37 9/17/37 9/26/37 9/23/37 9/29/37	787 Bbls. 534 Bbls. 550 Bbls. 502 Bbls. 114.66 738.96 583.20 1,141.56 305.52 707.00 965.76 900.00 144.84 368.00 417.72	1/4 13/64 14/64 13/64 1/4 1/4 14/64 1/4 9/64 14/64 1/4 1/4 7/64 13/64 1/4	41.4 41.7 41.2 41.6 29.0 41.4 41.6 38.2 38.2 35.8 38.0 39.5 38.9 38.6 29.2	7,093 7,035 6,915 6,732 3,533 6,962 7,225 6,840 7,276 6,664 7,226 6,914 7,146 7,131 3,601
LAKE PELTO (Terrebonne Ph.)	The Texas Co.	State #17	8/4/37	1,216 Bbls.	3/8	35.1	6,592
LEEVILLE (Lafourche Ph.)	The Texas Co. The Texas Co. The Texas Co.	LLE Leeville #42 LLE Leeville #67 LLE Leeville #66	8/1/37 8/3/37 9/4/37	80 Bbls. 611 Bbls. 80 Bbls.	1/4 5/16 1/4	29.9 39.2 22.7	4,105 3,969 3,878
LOCKPORT (Calcasieu Ph.)	Magnolia Petroleum Co.	Friberg & Wolf #6	7/30/37	432 Bbls.	1/4	41.2	6,915

Oil and Gas Wells Completed in South Louisiana During 3rd Quarter of 1937

Field	Name of Company	Name of Well	Date Completed	Initial Daily Production	Size Cchoke (Inch)	Grav-ity	Total Depth (Feet)
NORTH CROWLEY (Acadia Ph.)	Humble Oil & Refg. Co.	Federal Land Bk. #1	9/22/37	695 Bbls.	1/4	37.9	9,339
ROANOKE (Jeff. Davis Ph.)	Humble Oil & Refg. Co.	J. W. DeVilbiss #B-7	9/10/37	95 Bbls.	1/4	36.6	8,720
SOUTH ELTON (Jeff. Davis Ph.)	Stanolind Oil & Gas Co.	Calcasieu Nat. Bk. #B-2	8/28/37	129 Bbls. & 4 MCF	.....	52.0	9,854
STARKS (Calcasieu Ph.)	Lutcher-Moore Lbr. Co.	Lutcher-Moore Fee #2	9/17/37	300 Bbls.	.....	21.0	4,184
SULPHURMINE (Calcasieu Ph.)	Union Sulphur Co.	Fee #846	7/26/37	304 Bbls.	24/64	33.0	5,392
		Fee #848	8/27/37	377 Bbls.	1/4	32.3	4,934
TEPETATE (Acadia Ph.)	Continental Oil Co. Continental Oil Co. Continental Oil Co.	Adreas Veronie #B-2	7/27/37	156 Bbls.	9/64	34.6	8,302
		Homeseekers #D-3	8/4/37	143 Bbls.	5/32	37.8	8,311
		Vincent-Welch #2	9/5/37	204 Bbls.	5/32	38.4	8,309
VENICE (Plaquemines Ph.)	Tidewater Associated Oil Co.	Manhattan Land & Fruit Co. #3	7/18/37	484 Bbls.	3/16	38.0	7,208
VILLE PLATTE (Evangeline Ph.)	Continental Oil Co.	Folanie Tate #1	9/19/37	177 Bbls.	3/16	57.6	9,100
WEST HACKBERRY (Cameron Ph.)	W. T. Burton W. T. Burton W. T. Burton Sutton Joint Account Stanolind Oil & Gas Co. Stanolind Oil & Gas Co. Sutton Joint Interest	Roy Lewis #2	7/8/37	369 Bbls.	1/4	31.4	4,237
		Rosella Vincent #3	7/8/37	283 Bbls.	1/4	31.4	4,461
		E. R. Henry #1	8/12/37	771 Bbls.	1/4	31.5	3,737
		Portie #A-2	8/6/37	111 Bbls.	3/8	31.5	4,956
		Mary Duhon #5	8/23/37	460 Bbls.	1/4	31.5	4,875
		State #52	9/13/37	194 Bbls.	1/4	31.25	4,910
		Francis Duhon #A-1	9/16/37	324 Bbls.	3/8	31.0	4,948

Louisiana Conservation Exhibit Steals the Show!

By Estelle V. Cottman

The Louisiana Conservation Department exhibit, located in the center aisle of the Agricultural Building at the Shreveport Fair, attracted the major share of attention throughout one of the most successful exhibitions ever held in the State.

A large crowd was to be found at all times at the exhibit, which was in charge of competent attendants—asking questions, reading informative placards and admiring the wonderful display of Louisiana's natural resources.

Occupying the place of honor in the center of the booth was the large Brown Pelican, emblematic bird of the State, who looked down his long bill with a self-conscious air at the crowd in front of him. Many other of our State birds were on display. There was the familiar Meadowlark, the Catbird, the Cowbird—that pestilent wretch that builds no habitation of her own but lays her eggs in small

birds' nests. There were shown the Nighthawks, the Tanagers, the Gulls, the Terns, and that prince of gamebirds, the Woodcock, on which this year there is a short open season with a small bag limit, besides the Mallards, Spoonbills, Teals and our most beautiful duck, the Woodduck, which still enjoys a closed season.

Adjoining the display of minerals, was a large collection of pelts and fur animals, foremost among them being our little money getter, the Louisiana muskrat, whose small but sturdy skin is the backbone of Louisiana's fur industry. Fine mounted specimens of otters, minks, weasels, skunks, opossums, raccoons and "bobcats" attracted the interested attention of all, especially the children, who spent a great deal of time at the booth, coming back again and again to learn more about their State's natural riches.

Perhaps the most arresting part of the exhibit was a beautiful habitat

group depicting a forest scene, in which two magnificent deer were shown at a woodland pool. These bucks, most expertly mounted, were killed by Mr. Henry Smith, who lives near Shreveport. This group was arranged by one of the Department's taxidermists and was enhanced by bringing into the scene many brightly colored birds, small fur bearing animals and wood creatures.

It is not too much to say that this wonderful exhibit of the Conservation Department was the most spectacular display of the Shreveport Fair. If crowds around the exhibit at all times of day and night and complimentary remarks from thousands of visitors mean anything—then this exhibit DID steal the show!

Frog Skins

The business of shipping dressed frogs to Northern markets amounts to a considerable sum annually in Louisiana. Instead of throwing the skins to garfish in the streams, as is now the case, they might be used for making a novel kind of leather for ladies' shoes and purses.

Effect of the Bonnet Carre Spillway On Fisheries

By

PERCY VIOSCA, JR.

The first needles of the Bonnet Carre spillway were opened January 30, 1937, the greatest flow of river water into Lake Pontchartrain occurred during the flood crest in the latter part of February, and the spillway ceased flowing on March 19.¹ The average flow during the period of 48 days in which the spillway operated was 131,000 cubic feet per second. The total volume of water released during this period, 12,500,000 acre feet, was sufficient to fill the basin of Lake Pontchartrain nearly 2½ times. The maximum elevation of the lake above the normal seasonal level was a little less than 20 inches, attained on February 27. The average elevation above normal between February 9 and March 12, the period during which the flow over the spillway exceeded 100,000 cubic feet per second, was a little over one foot.

Less than a week after the spillway was opened, complaints came in from the Mississippi Coast that oysters were being killed. Investigation showed that the Mississippi River water, which was spreading northward and eastward in Lake Pontchartrain, had not yet reached West End. A large volume of fresh water was flowing through Mississippi Sound during the early part of February, but this came from the Pearl River as the result of heavy rains in the drainage area of that stream between the 18th and 24th of January. As far as could be learned, only one schooner load from Telegraph Reef showed freshly killed oysters, and of this load, only about one-half of one per cent were actually dead. No other simultaneous deaths of numbers of oysters were reported in the areas affected first by the Pearl River

flood waters and subsequently by the outflow of spillway water through Mississippi Sound. The general effect of the two floods on oysters in the Sound was beneficial; and, although the oysters in the affected area lost their salty flavor, they fattened and grew considerably during the spring and made fine canning stock.

At Point aux Herbes

It took two weeks for the muddy water to reach the east end of Lake Pontchartrain along the south shore, reaching Point aux Herbes on February 15. Little fishing is done at this season in this area. Turbidity of the water in Rigolets Pass was reported on February 16. On the north side of the lake, the muddy water drove schools of redfish and speckled sea trout into the pocket between Goose Point and the Tchefuncta River where they were caught in larger numbers than usual during the month of February. Eventually the speckled trout were driven eastward into the smaller pocket near Bayou Lacombe. Near the mouth of Bayou Lacombe and in Lake Borgne, great quantities of speckled trout were caught during the month of March and at that time the New Orleans markets were flooded with speckled trout from these areas.

During the week following Easter (March 29-April 4), dead fish were seen along the shores of the east half of Lake Pontchartrain from Bucktown and Mandeville eastward. A total of several hundred trout and a few redfish and croakers were reported killed, and a similar number was seen or captured in a sickened condition. A few sick mullets and menhaden were also noted. Apparently, there were more dead fish seen on the south side of the lake and more sick fish on the north side.

Easter Blizzard

It seems that the severe Easter blizzard churned up the lake so that fish numbed by the cold in shallow water along the southerly and easterly shores were either injured by being thrown against the sea wall or bottom, or were churned up with the mud and decomposing vegetation, which interfered with their breathing. The speckled sea trout is normally a shallow water species and is perhaps more seriously affected by sudden freezes than any other Louisiana species. The mortality cannot, therefore, be attributed entirely to the spillway, although the low initial temperature of the river water and its burden of silt were undoubtedly contributing causes. Many surviving fish eventually found their way to the calm north side of the lake where some were seen apparently with fungus spots on injured areas, and others recovering or dying from exhaustion caused by battling the cold, rough water. Neither sick nor dead fish were seen after the middle of April.

Although salt water fish continued to be caught in seines along the northeast shore of the lake during March, only fresh water species, especially river catfish, were taken by fishermen on the south side. During the time the lake was very muddy, crabs practically stopped biting in the areas most affected, this condition lasting until the 15th of April. The few crabs taken failed to shed and, consequently, no soft shell crabs were produced in these areas throughout the spring. Hard crabs continued to bite, however, in Lake Maurepas and in the pockets of Lake Pontchartrain near Mandeville and Bayou Lacombe. The temperature of the river water, which was much lower than is normal for the lake water at that season, was at least a contributing cause of the

¹ Figures furnished by Lt. Col. William F. Tompkins, District Engineer, U. S. Engineer Office, New Orleans, La.

trouble in the case of the crabs, and, furthermore, the spring weather was unseasonably cold.

River Shrimp, Crawfish

Lake Pontchartrain was heavily stocked with river shrimp and crawfish by the spillway water. Fresh water drum (gaspergou) and catfish caught in the west end of the lake during March were reported to be feeding largely on crawfish. During March and the early part of April, when the speckled trout moved eastward, the redfish in the lake apparently moved westward and were caught in larger numbers than usual off the mouth of Pass Manchac in spite of the muddy water. The stomachs of these were filled largely with river shrimp.

Fresh water fishing in Pass Manchac and Lake Maurepas slowed down for a time due to the cold spring weather, but after the first of April it increased. Yellow and blue catfish bit abundantly in Lake Maurepas and in the west end of Lake Pontchartrain. Great schools of shad migrated into Pass Manchac while the spillway was open and quantities of these were taken for bait by commercial fishermen. Black bass, crappie, and various kinds of sunfish were caught by anglers in the streams tributary to Lakes Maurepas and Pontchartrain as soon as the level of these lakes returned to normal.

Salt water fishing in Lake Pontchartrain picked up very slowly after the spillway was closed. The first speckled trout reported by anglers were caught in Irish Bayou Lagoon on Sunday, April 4. Croakers and young salt water drum began to bite in the lake early in April, biting fairly well along the east and north sides after April 9. Crabs bit fairly well after April 15, but the quantities taken were only about half of the normal for the season.

In Mississippi Sound, where the spillway flow combined with that of the Pearl River flood, the muddy fresh water reached as far east as Gulfport for a short time and as far east as Cat Island Channel and Pass Christian for a longer period. Al-

though the oysters on Telegraph and St. Joe Reefs were freshened, they are reported to have doubled in size during the two and one-half (2½) months after the opening of the spillway. The conchs, or oyster drills, on these reefs were killed by the fresh water. Speckled trout, driven eastward, were taken in unusually large quantities along the shores of Mississippi Sound during March and April.

Schools of Young Mullet

By the middle of March, the aquatic plants in Lake Pontchartrain were covered with a coating consisting of silt, algae and diatoms. In spite of the muddy water, these patches of vegetation were invaded by large schools of young mullet which fed upon this material. Grass shrimp and other small crustaceans in the lake multiplied rapidly because of the vast fertilizing effect of the waters from the spillway. In the east end of the lake, lake clams were also greatly benefited and produced an abundance of young which were eagerly sought by croakers and salt water drum. There were more drum but less croakers than usual, the shortage of croakers being especially noticeable throughout the summer in the southwestern part of the lake where the silt deposit was greatest, although normally this is a great feeding ground for large schools of this species.

The water began to clear in May and by the first of June it was fairly clear at the east end of the Lake. From then on the migrations of salt water fishes were about normal except in the extreme southwestern part of the lake where the heavy deposit of silt was stirred up by every blow and remained in suspension for long periods. Schools of Brazilian shrimp entered the lake late in May, followed by schools of speckled sea trout, sheepshead, small redfish, and flounders which began to bite at the east end of the lake at this time. Tarpon were noticed there for the first time on May 29. Sheepshead reached the Southern Railway trestle in quantities by the middle of June, jackfish by July 11.

Croakers, salt water drum and sheepshead reached Mandeville, and tarpon reached the Tchefuncta River and Pass Manchac, during the second week of July. Lake shrimp arrived in Lake Pontchartrain in July and appeared in numbers all along the south shore, from New Orleans to Frenier, by August 1. Mixed fishing increased after the arrival of the shrimp, but stormy weather muddied the water on several occasions and interfered with angling. September, as a whole, was very satisfactory for anglers, especially on the north and east sides of the lake.

By September 15, the lake shrimp had reached large size and began their return migration to the sea, swimming at night in schools near the surface. Fishing was exceptionally good during this period and until the end of the shrimp migration in late October; but after that there was a decided slump except for sheepshead which appeared everywhere. During November, some flounders were still in the lake, moving out, and small schools of large speckled trout and medium and small redfish moved in, especially along the north shore from Rigolets to Green Point.

The effect of the spillway was, on the whole, very beneficial because of its fertilizing effect on the waters of Lakes Pontchartrain and Borgne, and Mississippi Sound. A biological cycle of organism was started which was destined to materially increase the food supply in this area for some time. The plant growths were greatly stimulated, and associated animal life, such as scuds and grass shrimp was found in great concentration. Plankton feeders, such as mullet, anchovies, menhaden, and shad were seen in great abundance everywhere, and in addition to the large crop of crawfish and river shrimp which served as an accessory food supply for a time, both species of salt water shrimp thrived. The commercial shrimp crop taken in Lake Borgne and Mississippi Sound was the greatest since the shrimp trawl was introduced in 1917.

The relative abundance of different species in the area affected by

the spillway varies greatly from year to year and, except for the apparent shortage of crabs and croakers in Lake Pontchartrain and the muddy condition which persisted in the southwestern part of the lake, there was no extended deleterious effect that could be traceable to the spillway; and this loss was more than compensated for by the increase in other species, including fresh water fish. A few individual fishermen suffered, however, most complaints coming from the south shore.

In Lake Maurepas, every fisherman reported more and fatter crabs than usual, and fresh water commercial fishing better than average.

In Mississippi Sound, the benefit to the oyster reefs persisted into the fall. There was a fine set of oysters which will develop as next year's crop; and all conchs were destroyed. Fish and shrimp were more plentiful than usual during the summer and fall.



SOME ASPECTS OF LOUISIANA WILDLIFE

(Continued from Page 43)

a specimen of Holboell Grebe. This individual was the first ever to be recorded for the State of Louisiana. The Holboell Grebe breeds from northeastern Siberia, northwestern Alaska and northern Canada, south as far as Washington, North Dakota and southwestern Minnesota. It winters chiefly along the Atlantic and Pacific coasts and also south to the Ohio Valley. The nearest records to Louisiana have been casual occurrences in Georgia, Florida and Tennessee. There is no doubt that future study of the rich Catahoula avifauna will reveal other such wanderers of species as yet unrecorded for the State.

Duck hunting has an immense appeal to many of us, but there is little doubt that of all the game birds hunted in North America the Bobwhite, more than any other single species, provides the most hunting for the most people. It happens fortunately that Bobwhite do not travel far. They may even be content to live their

entire wild lives within an area of a few acres. We can therefore grow our own Bobwhite here in our State. The voice of the Bobwhite can be heard throughout Louisiana from the northern border to the waters of the Gulf. Conditions of natural propagation are good in most of its range. The Department of Conservation has inaugurated a program of artificial propagation that will supplement the natural quail supply and insure to the quail hunter good sport for many years to come. No other single game bird species has been the subject of such a volume of research as has the Bobwhite. The data thus gained are invaluable for the success of Bobwhite propagation under artificial conditions. The development of a system of State Parks already in progress will also be of importance in natural quail propagation. No hunting is permitted in State Parks. Appropriate areas set apart in each park will serve as quail nesting grounds from which with increase the birds can spread into adjoining lands.

The Ivory-Billed Woodpecker

Two extremely rare-non-game birds but species of particular scientific interest still occur in Louisiana. One, the Ivory-billed Woodpecker, is the special care of the Department of Conservation. Specific scientific studies of it are being conducted with the cooperation of the Department. It is a large and striking bird formerly believed to have become entirely extinct until its presence was discovered in one of the forested areas of the State. The Ivory-billed Woodpecker is a highly local species, a single pair may probably cover no more than a few acres of terrain.

The second species, the Whooping Crane, is also a striking bird. Tall, with a red head and white plumage with black-tipped wings, it formerly nested as far north as the sub-Artic, and migrated as far south as Louisiana. Today its status is somewhat obscure, but it seems to hover on the verge of extinction. It is encouraging to know that at least some of the remaining individuals of this magnificent bird species have wisely

chosen south Louisiana as their winter home, where in the numerous game sanctuaries maintained by State, Federal and private administration, the Whooping Crane can find complete protection through the months of its stay with us.

The Flight Speed of Birds

The speed of birds has always been a subject of friendly, if violent, controversy among sportsmen. It is so satisfactory to explain "a miss" by the alibi that the particular mallard was traveling at 333 miles an hour. Recently Dr. Roy Chapman Andrews of the American Museum of Natural History has compiled an extensive series of records established by various reputable observers under various and indicated conditions. I thought it might be of interest to you as sportsmen to examine some of these records even if you do not agree with them.

Let us start with the slower birds and go on to the faster ones. I have endeavored to include important Louisiana game birds, together with certain other quite familiar non-game species. Indication will be given of the method by which the observations were obtained. Certain addition records of aircraft, automobile and boats have been included for purposes of comparison. The figures which I am sure no two sportsmen will ever agree with are given in miles per hour:

American Egret (measured by automobile speedometer), 17 miles an hour.

Black Skimmer (measured by automobile speedometer and flying against a head wind over a distance of 3 miles), 18 miles an hour.

Turkey Vulture (measured from a train), 21 miles an hour.

House Sparrow (measured by automobile speedometer), 35 miles an hour.

Robin (measured by automobile speedometer), 36 miles an hour.

Homing Pigeon (a flight of 552 miles), 39 miles an hour.

Mourning Dove (measured by automobile speedometer over a distance of one mile), 41 miles an hour.

Bobwhite (measured by automobile speedometer and frightened), 49 miles an hour.

Shoveller (measured by automobile speedometer but evidently without undue exertion), 53 miles an hour.

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with both pleasure and safety. The present administration is not only fully maintaining, but is extending these roads, and it is to be hoped that in the future this important factor in our tourist relations will continue to fare as well.

Both A Summer And Winter Resort

In Louisiana we are also fortunate in having, thanks to a climate that hardly knows winter, a tourist "season" that lasts from January through December. We can offer our guests both a summer and a winter resort.

In tourist attractions we surely are second to no state in the Union. We can provide the modern conveniences and pleasures of the city, or the restful atmosphere of the pastoral scene; we have the Teche country, teeming with romantic associations and scenic beauty; we have the fertile Mississippi delta lands, with their incomparably beautiful cotton and sugar cane fields; we have fine old plantation mansions, standing today as they stood during the hectic days of the Civil War; we have oil fields—beehives of industry and modern Eldorados; we have a wealth of historical landmarks, each representing a person, a place or an incident forever a part of Louisiana; we have in New Orleans the Vieux Carre, steeped in the history and tradition of a poor colony that grew into a great metropolis; and we have the Carnival season and Mardi Gras—unique, spectacular, and interesting to the whole world.

We have all these attractions—these blessings that we enjoy ourselves, and can enjoy even more by sharing them with others. But we must not depend upon our attractions "as are" to uphold our reputation as a tourist mecca. We must lend our own aid to the task.

Other states such as California and Florida, long ago realized the tremendous importance of their tourist trade, and their efforts to maintain it and bring new visitors year after year have become almost traditional. In this endeavor the state,

the cities, the institutions, and all the people work together in a manner that is amazingly effective. Through such cooperation the citizens have not only become "salesmen" of their state, but have gained a fuller appreciation and helpful knowledge of its attractions and resources.

When such "state-consciousness" in the people is achieved, there is another profit derived from the tourist trade—hard to estimate in dollars and cents, but undoubtedly of importance: word-of-mouth advertising. This type of publicity is the most effective in the world, and it can make or wreck that which it advertises. One has to spend but a few days in California to appreciate the psychological value of such advertising. "Boost" is the byword in California, and it is encountered everywhere. The newspapers, the billboards, the business people, the schools, the officers of the law, and the man on the street all boost California. Small wonder that the tourist, returned to his native locality, becomes similarly a California booster; small wonder, too, that his neighbor, who was not quite decided about his vacation in the Adirondacks, should decide to go West and check up on his friend's boosting.

Psychology of "Boosting"

So, although we do not for a moment question the claims made for California's tourist attractions, the good psychology of the "boosting" is likewise not to be questioned. In our own efforts to increase tourist traffic we also might profit by the application of psychology.

Ordinarily when the tourist visits our State he is vacation-minded. He is in a receptive mood, having declared a postponement of his everyday cares, and he has a mind open to new interests, new diversions, and new acquaintanceships. The climate, the "atmosphere" of the State and the cities, the condition of the roads, the quality of the accommodations and the disposition of the people he meets all leave their mark upon him. When he leaves us his friends back home will hear a story that is good

for Louisiana or bad for Louisiana, depending upon the impressions he has received.

Making "Good Impressions"

It is our job to see that those impressions are good impressions. Obviously we can do nothing about our climate—and, as a matter of fact, there is little we would want to do about that. Our "atmosphere", too, we would not change—nor would our tourists. But our roads, our travelers' accommodations, and the maintenance of our traditional hospitality are things we can do something about. They are our personal responsibilities, and we can meet them satisfactorily and successfully if we will.

We are not by any means unaware of the splendid work in promoting Louisiana's welfare that is already being carried on by various Associations of Commerce and other organizations throughout the State. To the contrary we have frequently cooperated with them, and through this contact with them we well know just how productive their efforts are. It goes without saying that our present enviable number of annual tourists is due in greater part to their work. But we can undoubtedly do much toward broadening and extending their activities.

Every one can share in this work by giving the tourists the serious thought and consideration that is their due. We can lend our support to any movement directed toward improving our tourist attractions, and we can cultivate a consciousness of our personal obligation to these "paying guests".

With co-ordinated and concentrated effort there is no reason why we cannot increase both the number of our tourists and the size of their investment. The people of California have done it, the people of Florida have done it, and our people can certainly do as much. We do not lack the stock-in-trade, and we do not lack the salesman; we need only to try, and we can bring about as pronounced an awakening in Louisiana's tourist trade as she is now enjoying in her industries.

New Orleans Mid-Winter Sports

The Mid-Winter Sports Association has earned the lasting gratitude of New Orleans for not only providing her sports enthusiasts with such a varied program of entertainment but with publicizing the fact that New Orleans has no closed season, so far as outdoor sports are concerned.

While there was a drizzling rain during one-quarter of the Sugar Bowl football classic and a rather chilly wind for the track meet, most of the weather was really ideal, mild and balmy, throughout the eight days of the Sugar Bowl program. Well-nigh perfect, as the out-of-town guests had to concede.

It was a colorful program, with plenty of thrills for the spectators—

Speaking of thrills—that was an exciting finish in the inter-club fish class race won by Robert Brodie, of the Biloxi Yacht Club, whose sloop crossed the line only by thirteen seconds ahead of Joseph Marquez, of the Pensacola Yacht Club, with their sails drawing fine in a moderate breeze out of the northeast.

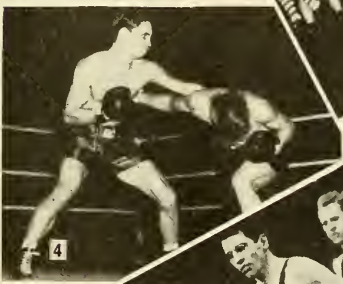
And that was a thrill when Bobby Riggs, a national No. 2 ranking tennis star, won his straight set victory over Joe Hunt of San Francisco, in the fourth annual Sugar Bowl tennis tournament, at the New Orleans Country Club—

When the Kentucky Wildcats rallied in their brilliant basketball game with Pittsburg at the Tulane gym and commenced throwing baskets for a score of 40 to 29—closer than the score indicated—

When the Santa Clara Broncos completed their magnificent forward passes in the Sugar Bowl football classic before a crowd that jammed the Tulane stadium to capacity and won a victory over the L. S. U. Tigers that was hard fought at every point—

When Glenn Cunningham, old master of the mile, reeled off four quarter-mile laps in four minutes, 13.1 seconds, at Loyola stadium.

Probably few other American cities could have staged such a variety of land and water sports in the heart of winter.



1. Inter-club yacht race, fish boat class, Lake Pontchartrain.
2. Bobby Riggs in action, New Orleans Country Club.
3. Kentucky vs. Pittsburg, basketball, Tulane gym.
4. New Orleans vs. Memphis, boxing, Coliseum.
5. Track meet, Loyola stadium.
6. L. S. U. vs. Santa Clara, Sugar Bowl football classic, Tulane stadium.

Photos
Courtesy
Item-Tribune



What Palms Grow In Louisiana

By

MIRIAM L. BOMHARD

PART II*

The feather-leaved (pinnate) palms are represented in Louisiana by 4 genera: *Acrocomia*, *Arecastrum*, *Butia*, and *Phoenix*. The date palms (*Phoenix* spp.) are discussed first because they are most widely planted.

PHOENIX Linn. Date palms.

Distinguishing features: The numerous leaf segments are attached to the rachis folded upwards (like a V); the lower segments are modified as sharp-pointed, usually grooved, stout or slender spines.

The Greek word, *phoenix*, is a very ancient name for the edible date palm (*P. dactylifera*), which has been cultivated for at least 4,000 years and is one of the world's most important and useful trees. This genus, including about 12 species, is native to Asia and Africa. The edible date palm is the only one valued for its fruits. The India date palm (*P. sylvestris*) is an important source of sugar.

Five species are grown in the open in Louisiana; there are also various hybrids, many of which are impossible to classify. A sixth species, the pygmy date palm (*P. roebelini*) used for indoor decoration, is frequently set out, especially in northern Louisiana, during the summer. The Canary Island date palm (*P. canariensis*) is the most widely planted pinnate palm in the State.

The leaves vary in length from 8 to 20 feet, the proportion of the petiole to the "blade" differing with the species. Except for the cliff date palm (*P. rupicola*), the lower segments, and also the spines, are most often grouped in 2's and 3's and disposed in 2 or 4 rows, causing them to stand out at various angles; the upper segments are generally more evenly spaced and tend to lie in one plane. The segments may spread out nearly flat beyond their insertion or remain

more or less folded to the tip, which is sometimes very sharp.

All the Louisiana species develop an erect trunk. *P. dactylifera* and *P. reclinata* are the only kinds which produce offshoots or suckers at the base and may be seen growing with several trunks (Fig. 10) or, if the offshoots have been removed, as single-trunked specimens. The leafbases may or may not be persistent. An area of roots at the base of the trunk is quite common in older palms and may extend several yards up the trunk in some species.

Date palms flower at an early age; the plants are either male or female (*dioecious*) (Fig. 11). Since they resemble each other superficially, it matters little from a landscaping standpoint which sex has been planted.



Fig. 10. Edible date palm (*PHOENIX DACTYLIFERA*). Audubon Park, New Orleans.

Each flower cluster (*spadix*), whether male or female, is borne inside a single scurfy *spathe*. The spathes develop at approximately the same level in the midst of the leaves but do not appear at exactly the same time—thus the flowering period for any one tree is prolonged. Although the male and female spathes differ in size and shape, they are, in general long-ovoid from a stalked base and from 1 to 3 feet long. They are compressed, with a flat face nearest the trunk and a rounded or bulged outer face; the margin, including the blunt apex, is usually keeled or winged. The spadix is revealed when the spathe splits from the top down the middle of its

*Note: Reference should be made to Part I (Autumn issue) for explanation of technical terms used in the discussions of genera and species for Figs. 1 to 8.

outer face; it may also divide down the inner face, thus forming 2 boat-shaped valves.

Each spadix consists of a flattened central axis from which arise numerous simple branches bearing the flowers (Fig. 8). It is especially interesting to watch the development of the male spadix. As the spathe begins to open, the spadix inside resembles an ivory carving of intricate design. The branches are hardly visible, only the waxy, cream-colored, angular flower buds closely pressed against one another. The buds open as the branches gradually spread; the flowers shed their pollen and drop off.

The female spadices bear small, white or greenish, globular flowers, some of which eventually develop into fruits (Fig. 12). The mature spadix shows the fruits hanging in frequently heavy clusters at the end of a long, curved stalk. The female flowers contain 3 carpels, of which only one matures when proper pollination has taken place. The dates of commerce are familiar to everyone—they are larger than the fruits of other date palm species, but their shape may be considered fairly typical. The seeds of all the species are brownish and have a rather deep, longitudinal groove; those of edible dates are

usually rather narrow and pointed at either end, differing from the oblong, shorter seeds of the other species.

In southern Louisiana, it is usually possible to find some date palm in flower at any time of the year except, perhaps, during April. The male and female trees of any one species do not necessarily flower at the same period. This is, no doubt, partially responsible for the tremendous amount of hybridization which takes place and helps to explain the great variation in cultivated specimens planted from seed of mixed origin. In the case of the edible date palm, the development of offshoots is fortunate, since planting these is the only possible way to insure offspring exactly like the parent tree.

P. canariensis, *P. dactylifera*, and *P. sylvestris* are quite hardy and admirably suited for planting in Louisiana. They are not as satisfactory as the windmill palm (*Trachycarpus fortunei*) and *Butia* species where the winters are not mild.

P. Canariensis Hort. Canary Island date palm.

This species is native to the Canary Islands, as the specific name indicates. It is a favorite ornamental almost throughout the palm belt of the United States, along the Mediterranean, and in other subtropical regions. It is suitable for neutral grounds, avenues, and gardens. Nearly every town in southern Louisiana has some excellent specimens of this palm. This is a hardy species—some few trees in New Orleans survived the notable freeze of February, 1899, when the temperature dropped to 6° above zero. The severe weather of February, 1933, damaged the leaves but the palms were not killed.

The Canary Island date palm never suckers but always develops a single, erect trunk. It is a handsome palm, bearing a huge, very symmetric crown of as many as 200 long, gracefully arching, blue-green leaves. From a distance, the leaves appear to have an orange-colored streak down their center, since the spines and, frequently, the petiole are of this color as are the thickened bases of each

Fig. 12. Fruits of the Canary Island date palm (*P. CANARIENSIS*).



Fig. 15. Trunk detail of a 15-foot tall, single-trunked edible date palm (*P. DACTYLIFERA*).



Fig. 11. Female flowers (left) and male flowers (right) of the Canary Island date palm (*P. CANARIENSIS*).

segment. Young plants have a bulb-like stem, resembling a huge pineapple (Fig. 13), but older palms have a columnar trunk, 50 feet or more in height, and marked with the characteristic diamond-shaped scars of the fallen leaves (Figs. 3 and 4). A robust specimen, 25 feet tall, measured 3 feet, 10 inches in diameter at ground level and 2 feet, 9 inches at 5 feet above; the leaves were 19 feet long.

This species has the stoutest petiole of all the Louisiana date palms, with very formidable, thick spines, which pass over gradually into the longer, soft-pointed leaf segments (Figs. 5 (b) and 10). There are 150 or more segments on either side of the rachis; those in the upper half of the leaf are fairly evenly spaced (almost opposite). Above the middle, where the segments are practically in the same plane, the leaf turns or swirls to hang edgewise, giving an elegant, plumelike effect.

The flowers (Fig. 11) appear from



Fig. 14. (left). Petiole, showing arrangement of spines. Canary Island date palm (*P. CANARIENSIS*).

Fig. 17. (right). Petiole, showing arrangement of spines of edible date palm (*P. DACTYLIFERA*).



Fig. 16. "Open" crown of the edible date palm (*P. DACTYLIFERA*), showing erect, stiff upper leaves.

Fig. 13. Young open-grown Canary Island date palm (*P. CANARIENSIS*). City Park, New Orleans.

July to December; the fruits may be ripe from August to February. Some trees are thus in fruit while others are flowering. The fruits are not edible; they are oblong, somewhat less than one inch in length, and contain a single, fairly large, oblong seed (Fig. 12). They are usually yellow or orange in color, but we have some trees bearing deep purple fruits; others are reddish-brown.

When about to split open, the male spathes average nearly 2 feet in length and 3-5 inches in width; the female spathes are somewhat shorter and narrower. The young female spadix has a very short stalk; which by the time the fruits are ripe, has grown more than the rest of the spadix. In a 10-foot fruiting spadix, the stalk measured 7 feet, the remaining distance being occupied by the part bearing the fruiting branches.

This palm is usually easy to recognize, even though it does vary from seed. Since it takes up a great deal of space even when young, ample provision should be made for its size when it is first planted out. It is certainly the handsomest of the hardy, tall date palms.

(The next installment of this series will appear in the Spring issue of Conservation Review).

UNIQUE INDUSTRY WILL BE DEVELOPED

(Continued from Page 13)

and after examination expressed the belief that it was fuller's earth, but his friend knew that it was a substance which had been used since the Middle Ages in Europe as a cleansing agent for fulling woolens and cloths.

Expansion Proposed

Twenty-four years after the discovery Mark P. Seirsdale came to Bogalusa from Chicago, where he was engaged in efficiency engineering. Mr. Stupka showed Mr. Seirsdale a piece of the discovery material. Mr. Seirsdale immediately started a more complete investigation with the idea in mind of organizing a cosmetic manufacturing business. The investigations were carried on for some time and then BoniFacial, Inc., was organized and the manufacture of cosmetics, using fuller's earth as a base, was started.

After several years of operation the board of directors of BoniFacial, Inc., decided to have their properties explored to determine the quantity and quality of what appeared to be one of the largest and most concentrated deposits of fuller's earth so far discovered in the United States.

One of the most enthusiastic believers in the possibility of a new, large development for Louisiana and Bogalusa was Bascom D. Talley, city attorney for Bogalusa for many years. Mr. Talley, after deciding that it would not be expedient to endeavor to finance such a large industry locally, obtained permission of the board of directors of BoniFacial to enlist the aid and services of New Orleans financiers. He consulted with Lachlan M. Vass & Company, Inc., New Orleans. After consideration of the possibilities Mr. Talley and Lachlan M. Vass consulted with Philip J. Liuzza, investment dealer, and it was decided to consult certain prominent business men of New Orleans.

Call Upon Governor

These men became immediately interested and offered to help promote and develop the new industry and

have cooperated to the fullest extent since the day it was brought to their attention. They called on Governor Richard W. Leche, knowing of his great interest in the development of new industries for the state, and were met with enthusiastic response.

The necessity for accurate determination of the quantity and quality of the fuller's earth required the engagement of competent engineers. Ralph Earl of the Earl Engineering Company, New Orleans, was called upon to investigate and determine the accuracy of the original report of Mr. Brandin. After exhaustive investigation Mr. Earl reported a minimum of nearly 7,000,000 tons of fuller's earth and clay present on the more than 1,700 acres of land owned or under lease to BoniFacial.



SOME ASPECTS OF LOUISIANA WILDLIFE

(Continued from Page 53)

Ruby-throated Hummingbird (measured by automobile speedometer and without undue exertion), 55 miles an hour.

Turkey (measured by automobile speedometer and frightened), 55 miles an hour.

Mallard (measured by airplane over a distance of 10 miles and frightened), 60 miles an hour.

Eagle (measured by train), 60 miles an hour.

Canada Goose (chased and measured by airplane), 60 miles an hour.

Crow (measured by train), 60 miles an hour.

Pintail (chased and measured by airplane), 65 miles an hour.

Canvas-back (chased and measured by airplane), 72 miles an hour.

Graf Zeppelin (in a flight of 1945 statute miles), 115.2 miles an hour.

Golden Eagle (chased and timed by watch), 120 miles an hour.

Duck Hawk (a rare winter resident in Louisiana, hunting and timed by watch), 180 miles an hour.

Airplane (over a flight of 1,864 miles), 440.6 miles an hour.

The fastest of all living creatures is apparently a peculiar fly that lives in the Andes. This fly, parasitic upon deer, has the technical name of *Cephenomyia*. The female according to careful scientific studies of this insect travels at a speed of 614 miles an hour, while the male travels at a speed of 818 miles an hour.

It is interesting to compare certain slower animals. The Coral King

Snake, for example, who at top speed travel at .72 miles an hour, while the running Chicken makes 9 miles an hour, a charging Elephant, 24.5 miles an hour, a Whippet, 35.5 miles an hour, a Greyhound, 36 miles an hour, a Race Horse (Bob Wade over a quarter mile course), 42.3 miles an hour, a Jack Rabbit (chased and measured by automobile speedometer), 45 miles an hour, a young buck Deer, 49 miles an hour, a Cheetah (over a course of 100 yards), 70 miles an hour, an automobile, 301 miles an hour, while a Carp can manage a bare .9 mile an hour, Perch 1.03 miles an hour, Salmon, 7 miles an hour, a submerged submarine, 10 miles an hour, Flying Fish (just before take-off), 35 miles an hour, the Normandie (over a course of 3474 statute miles), 35.9 miles an hour, the U. S. Naval Vessel Lexington (over a course of 885 statute miles) 26.9 miles an hour, an outboard motorboat, 74.2 miles an hour, and Campbell's Bluebird (over a course of one mile), 129.6 miles.

The problem of maintaining a good supply of fish is rather easier in Louisiana than it is in the far northern states. Practically all our important southern fresh water fishes build nests in shallow water and give parental care to their young. The fish hatcheries which the Department of Conservation maintains are so organized that the optimal conditions for successful breeding are provided for our important fresh water game fish. The output of the hatcheries is distributed free of charge for public planting, while in the case of planting in private waters a small nominal charge is made to defray partially the cost of transportation. There has been no need to consider any artificial propagation of our sea fish, since our rich coastal waters evidently provide a satisfactory supply.

Pollution Problem Complex

The worst factors that affect fish in inland waters are factors of pollution. The Department of Conservation is extending its studies in this field so that the evil influences of pollution may be reduced and where

(Turn to Page 66)



Muskrat home in a normal marsh—plenty of fresh water, three-cornered grass—and properly trapped.

Muskrat vs. Mink

Lady, Take Your Choice---
Louisiana Leads With These
Two Favorites of Fashion.

By
WILL BRANAN

Despite the fact that Louisiana's muskrat is a strict vegetarian and her mink a predatory creature of blood-sucking propensities, the pelt of the mink commands a much higher price in the market than that of the muskrat.

This season, with milady's hubby's pocketbook somewhat attenuated and all luxuries feeling the effect of a depression that is not a depression, according to our expert economic advisers, astrologists and numerologists, the mink's pelt is bringing about \$4 compared to one-half dollar for that of the modest muskrat.

The price difference, however, by no means reflects the difference in quality or popularity of the pelts. When made up from the silkiest of

muskrat furs, properly matched, the muskrat coat is hardly to be distinguished from that of the mink—and when we take a peep at the price tag on the mink we may easily overlook whatever discrepancies there may be. At \$150 for the muskrat a lord of the Orient might gladden the hearts of a sizeable harem for the \$1200 that he would have to pay to cover his favorite with mink.

No doubt the difference in price reflects the relative size of the catch. Whereas there will hardly be more than 300,000 minks taken in Louisiana in a single season, the muskrat catch may run from two to six or seven million; possibly three million this current season. The development of the muskrat industry is compara-

tively recent and while it may never yield the same returns to Louisiana as oil, or even natural gas, there are some phases of it that intrigue one's interest, especially the interest of one who has a mathematical turn of mind.

Very Domestic Is The Muskrat

For instance, consider the possibilities of the muskrat's domestic life. A congenial pair of muskrats—and presumably there are no companionate or trial marriages in Marsh-land—will breed a litter of baby muskrats every three months. There is nothing unusual about quintuplets or even sextuplets in the muskrat family, and in another three



Under-trapped marsh, where the food supply has been exhausted by an over-abundance of muskrats.

The muskrat is very domestic---as a provider for the weaker members of his family he sets an example for the human race.

months each of the new generation will be happily married and surrounded by still another family of little ones. If we apply the law of arithmetical progression to this quaint custom we can easily figure two or three thousand descendants of a single pair of muskrats in the cycle of fifteen months.

At this rate we might have a fur coat for every man, woman and child in the United States and Liberia, but it seems that the muskrat is regarded as a rather choice delicacy by alligators, minks and raccoons—even big hawks swoop down on them when it comes dinner-time for the little hawks.

With its seven million acres of marsh-land Louisiana provides an ideal home life for the muskrat family, which is not at all finicky in

its diet—a square meal of three-cornered grass appears to be all that the muskrat gourmets or gourmands require. The muskrat demands plenty of water, however, and it is the varying composition of our fresh and salt waters, and their combination of brackish waters, that produce the distinctive qualities of the muskrat's fur. The fresh-water pelt is softer or silkier, and darker; salt water gives a reddish tinge and tends to stiffen the fur.

As a home-body and provider for the weaker members of his family the muskrat might well serve as an example for the human race. Having bedded a nest of grass for his family on the "trembling prairie," the male goes out on a foraging expedition for the little ones. If he meets with some catastrophe and fails to return, the

mother goes out to provide for her babies. In the event that she should fail to return, the older brother or sister, of the previous litter, will assume the responsibilities of the household, bringing in food for the youngest members of the family.

Under the Department of Conservation's regulations the trapper is not allowed to set his trap within twenty feet of the muskrat's nest, a measure designed to protect the babies—surely the inspiration for this was the protective instinct of the older members of the muskrat family.

Grading and Matching Of Muskrat Pelts

Armand Daspit, director of the wild life division of the Department of Conservation, recalls that fifteen or twenty years ago there was practi-



cally no market for muskrat pelts, which brought as little as eight or nine cents a-piece. Through more careful grading and matching, and the stimulation of interest in the style centers, the market has gradually improved. Last season the Department of Conservation, which auctions at its Abbeville warehouse the pelts taken by trappers on state-owned lands, received an average of \$1.19 the pelt, splitting fifty-fifty with the trappers—the take usually runs from thirty to forty thousand pelts yearly.

Nowadays the muskrat pelt is divided into three sections so that it may be matched by color and texture; the back will furnish the fur for milady's black coat, the belly for a silver coat and the sides for a golden brown or tan coat. Several thousand pelts may be assorted to

THE MUSKRAT GOES TO MARKET

(Pictures, top to bottom).

Trapper's cabin built by Department of Conservation and former cabin now used as warehouse—Pelts drying on stretchers—Pelts bundled and ready for market—Buyers examining furs preparatory to making bids at the Department's Abbeville warehouse.

produce the coat that is carefully matched, although seventy-five will yield the quantity of fur required.

At one stage in the progress of this unique industry there was a muskrat by-product known as "pieces". Whenever a muskrat was injured in the trap, or perhaps partially eaten by some predatory animal, the "pieces" went to market, to be made up as the fringe for baby clothes, toys or other use. The jobber in "pieces" was often tempted to put one over the manufacturer's agent or buyer by dividing one piece into two parts, as there was no accepted standard of measurement. A related phase of the trade was that of the dealer in mice fur, which had a vicarious market demand, but the constriction of the late depression seems to have left this field largely to the house tabby.

The legal trapping season extends from November 20th to February 1st.

By the opening day the trapper has cleaned the rust from his traps, oiled and put them in condition. The law permits the trapper to set out 250 traps, but he is required to visit them at least once a day, to relieve the suffering of any injured animal. The S.P.C.A. and other humane agencies show occasional interest in the fate of the fur-bearing denizens of Louisiana marshes, but up to this writing no painless method of taking the muskrat has been adopted. It is even questionable if a closed season for muskrats, over a period of years, would materially help the situation, as the chances are that the accelerated surplus of muskrats would consume the food supply of the marshes and soon perish of starvation. They are also subject to the ravages of parasites and intestinal disorders, which make them an easy prey for their predatory enemies.

Proverbial Honesty Of Louisiana Trappers

There have been as many as twenty thousand licensed trappers in Louisiana, at \$2 per head, but with the diminishing demand for luxuries in the depression years this number was reduced to 7,000 to 8,000, most of them located in the Gulf Coast parishes. They are a hardy lot, in many cases descended from the early French and Spanish settlers. Usually they have some other occupation, such as shrimp trawling or truck-gardening. Industrious and generally God-fearing, they have a reputation for honesty that is borne by comparatively few people, as a class—perhaps an attribute of that Acadian strain of the Evangeline country, by way of Bayou Lafourche.

It is the custom of buyers to go out amongst these trappers, carrying with them from one to two and three thousand dollars in cash, to be paid for pelts on the spot, often staying overnight with the trapper and his family, but there has yet to be reported the single instance of a robbery or murder or slightest molestation of the guest.

The principal by-product of the muskrat now goes to waste. There is very little demand, if any, for

Models for the pictures of muskrat and mink furs which accompany this article were selected from the personnel of the Department of Conservation.

Louisiana leads in the production of mink, which makes a very attractive neck-piece, as shown below.





The stylish appearance and durable quality of the Louisiana muskrat coat is extending its popularity from year to year.

muskrat meat, although connoisseurs claim that it is just as tasty as squirrel or 'possum. It is extremely porous; when stewed down it is greatly reduced in quantity. Undoubtedly the prejudice against it is due to the fact that it belongs to the rodent family, even though it is a vegetarian; and when it appears on the menu as musk hare or swamp rabbit the prejudice disappears.

Shakespeare remarked that a rose by any other name would smell as sweet—if we could achieve a substitute cognomen for the muskrat we might augment the income from Louisiana's natural resources to a considerable extent. We might even consider calling it the musk-rabbit but for the fact that the rabbit already enjoys its own particular niche in the fur trade—by no means an unimportant one, as some little blonde cutie may find out if she examines too closely the fur coat her "sugar daddy" gave her for Xmas.

Dog-food offers one outlet for muskrat, as there is apparently no prejudice on the part of the canine tribe to this particular form of nourishment; but it is like eating bread and molasses—the supply of dogs may not keep up with the supply of muskrats or vice versa.

The "musk" section of the cognomen is derived from a characteristic habit of the animal during certain periods of excitement, but those who have encountered the skunk will not be disturbed or mortified by the comparatively mild performance of the muskrat.

The Aristocrat Of Louisiana Furs

The aristocrat of the Louisiana fur-bearing animals is the otter, whose pelt brings from \$10 to \$15; in good years as high as \$25 to \$30. It is only occasionally that the trapper comes across the otter, the outturn in a single season being hardly more than 700 or 800 pelts.

Largest of the Louisiana pelts is that of the raccoon, three or four times the size of the muskrat; but its market value is only one-third that

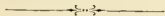
of the mink, one-tenth that of the otter.

As we contemplate the breeding propensity of Mr. and Mrs. Muskrat, who have apparently not been advised of the birth control movement, and as we are impressed by the number of beautiful fur coats descended from their conjugal adventures, we might be justified in replacing the Pelican with the Muskrat as the emblem of our great state. But this season there would probably be a loud protest from the muskrat dealers to any such suggestion—they have enough muskrat, for the present, at any rate. It is a mighty precarious business—a slump in the stock or bond market, the turn of a chorus girl's ankle—down goes the market—or up!

The only Xmas present the poor dealer wanted was a first-class fire with his muskrat stock fully insured.

From a numerical view-point this has been an unusually good season for muskrats domiciled in the swamps and marshes contiguous to New Orleans, the fresh water and food elements deposited by the Bonnet Carre Spillway having contributed to this favorable condition. Drainage of large areas of marsh-land has depleted the muskrat supply of certain sections; but the extension of the wild life refuges of the state insures a continuous supply, especially where there is a conjunctivity of fresh water and three-cornered grass.

Gentlemen may prefer blondes—and blondes should prefer muskrat to mink—if they are smart—and save the difference to eat in the next depression when gentlemen's pocket-books are deflated.



They may call it "Hudson seal," but it is really Louisiana Muskrat dyed black—a sample of the furrier's versatility.

EDITORIAL

By THE COMMISSIONER

An Important Meeting

The petroleum geologists will hold their annual meeting in New Orleans March 17-24, and it may be opportune to emphasize the importance of this meeting to the people of New Orleans, and of the entire state, at this particular time. These men constitute the advance guard of the petroleum industry—it is on their advice that the big companies, major and independent, move forward or retreat, spending vast sums in exploration, drilling, testing, and producing.

We may venture to assert, without fear of contradiction, that no equal area of the earth's surface holds more of interest to the oil industry than the state of Louisiana. This interest is intensified in the eyes of the geologists by the character of the formations disclosed by deeper drilling, in which this state has pioneered.

Most of these petroleum engineers have their offices outside the state of Louisiana, in other oil centers, and this meeting will afford them the opportunity to see at first-hand the conditions under which the oil industry is marching forward in this region, to actually contact and "feel" the nature of the topography, something of the possibilities of further development, which they have perhaps envisioned from a distance.

What will be the effect of this first-hand observation we may only surmise; but as we contemplate the headway that has been made in Louisiana during the past twelve months it is no stretch of the imagination to picture the tremendous impetus that may be given this movement by such a gathering of the key men of the industry. Dr. Howe and Dr. Russell have been telling us that one of the world's greatest petroleum reserves lies under the state of Louisiana; the visiting geologists will carry this message to the world.

With the eastward trend of production along the Gulf Coast it is not

too much to look forward to the day when New Orleans will be one of the great oil centers of the world. Time not only marches on—it is the essence of change, of transition and flux.

In the past five years we have witnessed the production of crude oil increase in the United States from 785,159,000 barrels in 1932 to 1,276,000,000 barrels in 1937—62.8 per cent of world production, which passed the two billion mark—and yet this increase in the supply has barely kept pace with the increasing demand.

For this reason the most widespread exploratory program in the history of the industry has been inaugurated; the geologist and the wildcat driller are extending their operations to the remotest parts of the world.

New Orleans is not only the gateway and outlet of the Mississippi Valley; it occupies a strategic position with respect to the present producing fields and those potential areas that will inevitably be developed in the next decade. Whether her people are oil-conscious or not, the oil industry is moving in—the advance guard will be with us in March.

SOME ASPECTS OF LOUISIANA WILDLIFE

(Continued from Page 59)

possible completely eliminated. The problems there involved are complex, and it is surprisingly true that although pollution has affected most seriously the wildlife of the whole continent only in recent years have many agencies undertaken the necessary technical studies. The Department of Conservation of Louisiana has been one of the pioneers in these studies. The outlook is reasonably cheerful since in many important instances the industries themselves are anxious to cooperate, realizing that in this matter of good public policy such cooperation is good business policy.

All in all, Louisiana's hunting and

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Louisiana's fishing offer opportunities nowhere excelled in the United States. The activities of the Department of Conservation are directed to maintaining the excellence of these sports and to making them more and more available to everyone.

The primitive pioneer world of wildlife is irrevocably gone. Ours is a new world of adjusted agricultural activities, expanding industries and scientific wildlife conservation. The success of that new world depends upon the care with which we plan, construct and correlate the complex elements that comprise it. That task is a great one, fundamentally important for our future human happiness, and in that task all American sportsmen must play their full part.



The Conservation of Beauty

This title is suggested by the above picture of dogwood in bloom near Jonesboro, Louisiana.

Beauty is by no means restricted to landscape effects—it is always in the “eye of the beholder,” that camera eye which mirrors its thousands, tens of thousands, reflections of beauty.

In the extension of its wild life refuges and the development of its parks Louisiana will preserve for future generations some of the natural beauty that is its heritage—many rare species of plant and animal life that might otherwise suffer from careless or indifferent treatment.

The wild life refuges of Louisiana cover 757,513 acres, as follows:

State Owned: State Wild life Refuge (Vermilion Parish), 13,000 acres; Russell Sage Wildlife Refuge (Marsh Island, Iberia Parish), 79,000 acres; Rockefeller Foundation Refuge (Cameron and Vermilion Parishes), 86,000 acres; Passa-Loutre Hunting Preserve Plaquemine Parish), 66,000 acres. A total of 244,000 acres.

Leased to State: Singer Wildlife Refuge (Madison Parish), 81,000 acres; Ayres-Fisher Preserve (Tensas and Madison Parishes), 45,000 acres; Theo Terzia Game Preserve (Morehouse Parish), 68,000 acres. A total of 194,000 acres.

Northwest Louisiana Fish and Game Preserve (Winn and Natchitoches Parishes), 22,000 acres.

Forestry Preserves—Privately owned: Urania Forest Preserve (LaSalle Parish), 28,000 acres; Lote Thistlewaite Game Preserve (St. Landry Parish), 11,280 acres; Great Southern Lumber Co. Preserve (Washington Parish), 5,000 acres; State Forest (Rapides Parish), 6,000 acres. A total of 50,280 acres.

Owned by National Association of Audubon Societies: Paul J. Rainey Wildlife Refuge (Vermilion Parish), 26,000 acres.

Federal Owned Refuges: Delta Migratory Waterfowl Refuge (Plaquemines Parish), 45,000 acres; Sabine Lake Migratory Waterfowl Refuge (Cameron Parish), 137,233 acres; Lacassine Migratory Waterfowl Refuge (Cameron Parish), 39,000 acres. A total of 221,233 acres.

DEPARTMENT OF CONSERVATION

126 Civil Courts Bldg..

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Louisiana's Invitation to Industry

In granting a 10-year exemption from taxes to new industries Louisiana was not motivated by purely unselfish or altruistic reasons—her legislature was thinking that both Louisiana and industry might work together to their mutual profit.

If the industrialization of Louisiana were an artificial development, without the basic factors essential to the continued expansion of industry, such a subsidy might conceivably prove a mirage, leading to the downfall of capital and management, to the distress of labor.

But here in Louisiana there is a remarkable conjunction of certain conditions that are not duplicated elsewhere—

For example—

- (1) the greatest variety of natural resources, which serve as the raw materials for industry, to be found in America—
- (2) cheaper fuel for industry from one of the largest reserves of natural gas in America—
- (3) cheaper transportation for raw materials and fabricated merchandise over the most complete system of inland waterways in America—
- (4) accessibility to the population centers which are gradually moving southward and westward, giving assurance of a continued consumer demand for many years to come—
- (5) an equable climate with a year-round season for work and play in the open—
- (6) a labor market as yet unspoiled by the infusion of alien agitation—
- (7) the background of comfortable and congenial living conditions, recreation and educational facilities that make for a more contented family life.

All of these conditions will appeal to the alert business man or manufacturer, seeking a new location for his factory, assembly plant or branch office. Further information may be obtained from the Board of Commerce and Industry at Baton Rouge, Louisiana, or by writing—

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